THE AMERICAN GAS LIGHT JOURNAL

REDMAN & KENNY, N.Y.

PUBLISHING OFFICE No. 42 PINE STREET

DEVOTED TO THE INTERESTS OF ILLUMINATION, VENTILATION, WATER SUPPLY AND DISTRIBUTION, & GENERAL SCIENCE.

VOLUME XXXVIII.—No. 6. Whole No. 570. | NEW YORK, FRIDAY, MARCH 16, 1883 | $3 PER ANNUM IN ADVANCE.

A. M. CALLENDER & CO., Proprietors. C. E. SANDERSON, Manager.
G. WARREN DRESSER, C.E., Editor.

ENTERED AT THE POST OFFICE AT NEW YORK, N. Y., AS SECOND CLASS MATTER.

Terms of Subscription, Including Postage.—For the United States and Canada, $3 per annum. European countries, $3.50 (15 shilling—18 francs). All payments to be made in advance. Single copies, 15 cents.

Collections are invariably made directly from this office, for subscriptions, advertisements, etc. We have agents to solicit the same, but they are not authorized to receipt for money.

Remittances should be made either by post-office order, registered letter, or bank draft on New York, payable to the order of A. M. Callender & Co.

The American News Company, Nos. 39 and 41 Chambers street, New York, are agents for this JOURNAL. Newsdealers will send orders to them.

CONTENTS.

An Asterisk (*) denotes an illustrated article.

Notice of the Sixth Annual Meeting of the Western Gas Association 121.

EDITORIALS—

Carburetted Poison..... 121
No Charter Granted for Washington, D. C..... 122
The Ross Steam Stoking Machines..... 122
Street Lighting in Brooklyn, N. Y..... 122
*The Management of Small Gas Works..... 123
Dangerous Practical Jokes..... 124
Thirteenth Annual Meeting of the New England Association of Gas Engineers—Official Report..... 125
Majority and Minority Views of the Committee to Whom was Referred the Application of the United States Gas and Fuel Company for Lighting the City of Washington, D. C..... 128
The Macon (Ga.) Gas Light and Water Company's New Works..... 130

ITEMS OF INTEREST FROM VARIOUS LOCALITIES..... 131

A Black Eye for Opposition in Cincinnati, Ohio—A New Superintendent of Lamps for Boston, Mass.—Petroleum Operations for February—An Explosion of Gas at Eastport, Me.—A Liberal Offer—Hari-Kari to be Superseded—The Putnam House Adds Another to the List—And Still They Use It—Coal Awards. Philadelphia, (Pa.) Gas Trust—Richmond (Va.) Gas Matters.

CORRESPONDENCE—

Defects in Management of Small Works..... 132
Poughkeepsie Street Lamps..... 132
New Shops and Foundry of the Oregon Iron Works..... 133
Magnitude of the Gas Interest..... 133
Gas Matters at Brockville, Canada..... 133
Price of Gas Reduced in Nashua, N. H..... 133

[OFFICIAL NOTICE.]

Notice of the Sixth Annual Meeting of the Western Gas Association.

The Sixth Annual Meeting of the Association will be held at Cincinnati, Ohio, on the 9th, 10th and 11th days of May. Due notice of the action of the Committee of Arrangements will be given in a subsequent issue of this JOURNAL.

Members intending to present papers will confer a favor upon the Secretary by forwarding to his address at as early a date as possible the titles of their articles.

Sincere pleasure is taken in stating that the outlook for a profitable and largely attended meeting is exceedingly favorable, and the best of reasons exists for the belief that this expectation will be fully realized.

A. W. LITTLETON, Secretary.

CARBURETTED POISON.

About five years ago a series of articles appeared in this JOURNAL, from the pen of Dr. Henry Morton, President of the Stevens Institute of Technology, Hoboken, N. J., pointing out the exceedingly poisonous qualities of carbonic oxide, and the danger to public health that might result from permitting too large a proportion of this constituent in illuminating gas.

Many have been the assertions on both sides of the question that have appeared since the publication of the articles referred to above; but it would seem that the facts which have been developed by its use would lead any reasonable mind to conclude that there *is* danger to public health from its use. At that time it was a matter of opinion, and an honest difference of opinion is always to be respected; but five year's use of water gas has certainly placed the matter beyond the pale of opinion. Previous to the introduction of water gas in New York City, for fifty years there is no record of death from inhaling coal gas; and although men engaged about the works and mains are often overcome, exposure to fresh air brings immediate relief, and it said to be a fact that no person found alive was ever known to die from the effects of inhaling coal gas. People have, doubtless, been overpowered and smothered by coal gas, under peculiarly favorable circumstances; but such cases are extremely rare—for coal gas *does* not contain enough of the only poison in illuminating gas, viz., carbonic oxide, to produce the blood-poisoning which is so fatal in cases of water gas suffocation.

One argument used is that gas is furnished for lighting purposes. This is all very well if you are absolutely sure that there are no leaks in the pipes; for, if such should be the case, the air for breathing purposes becomes polluted, and the gas does enter as an element into the air for breathing.

Quantities of phamphlets, and circulars of all kinds, are distributed by both sides to show that the views taken by each are right. A pamphlet recently received from Richmond, Va., containing a minority report on this subject, made by the Committee on Light, to the City Council, appears to treat the matter more as one of fact than theory. A list is given of the cases in New York and Brooklyn which have been published in the daily papers, giving date, name of paper, etc. This list extends up to about January 1. Since then there have been several other cases which we have added.

Names.	Locality.	Newspapers.	Date.
John Gilleland†	St. Charles Hotel	Times	Oct. 27, 1878
John Brown*	31 Bowery	World	Nov. 8, 1878
Lorenzo M. Locoma*	21 East 4th st	Times	Nov. 18, 1878
Dominick Hart†	133 Crosby st	World	Dec. 20, 1878
Elizabeth Williams†	31 Bowery	World	Nov. 8
Wm. Rigby†	133 Crosby st	World	Dec. 20
Thos. Knight†	33 Crosby st	World	Dec. 20
Jerry Nichols*	St. Cloud Hotel	World	April 25
Susan Cochrane*	53 West 13th st	Tribune	Jan. 23, 1880
Mr. Augsley†	New York Hotel	World	April 16, 1880
Mr. Broodburst†	do do	World	April 16, 1880
John Donovan*	115 West 32d st	Herald	May 23, 1880
Andrew Mackey†	49 Whitehall st	Star	May 18, 1880
Lewis Baker*	French's Hotel	Herald	May 21, 1880
S. Lawson*	New Southern Hotel	Times	June 4, 1880
Augustus Hagenor†	45 Bowery	Times	June 25, 1880

* Dead. † Suffocated.

Names.	Locality.	Newspapers.	Date.
J. Glospsky*	Crook's Hotel	Times	Sept. 20, 1880
David Kearney†	316 Greenwich st	Herald	Oct. 2, 1881
G. J. Maxwell†	316 do	Herald	Oct. 2, 1881
Sophia Tugenito*	Anson House	World	Nov. 1, 1880
Bertha Wiese*	338 Henry st	Telegram	Nov. 4, 1880
Thomas Coleman*	Putnam	Com'l Adver'r.	Dec. 3, 1880
Patrick Ferrigan*	80 Duane st	News	Dec. 1, 1880
John Sloane†	do	News	Dec. 1, 1880
S. Sherwood*	Earl's Hotel	Telegram	Dec. 16, 1880
F. Borge*	Summit Hotel	Times	Nov. 19, 1880
C. W. Davis†	Sweet's Hotel	Telegram	Dec. 17. 1880
R. A. Stillwell*	N. River Hotel	Times	Dec. 24, 1880
Fredk. Albert†	Summit Hotel	World	Dec. 27, 1880
Patrick Nolan*	10 First st	Herald	Jan. 1, 1881
I. Hammersley*	do	Herald	Jan. 1, 1881
R. B. Reynolds*	Van Dyke House	World	Jan. 3, 1881
Fredk. Keal†	39 Bowery	Tribune	Jan. 6, 1881
Joseph A. Grant†	1355 Broadway	World	Jan. 12, 1881
Michael Lynch†	328 East 27th st	Sun	Jan. 14, 1881
John Bunyan*	N. Y. Hotel	Sun	Jan. 22, 1881
John Galen†	Central Hotel	Sun	Jan. 24, 1881
Knapp†	do	Sun	Jan. 24, 1881
Henrietta Braundofer†	955 3d Ave	Telegram	Feb. 12, 1881
Barbara Weiss*	do	Telegram	Feb. 12, 1881
Gustave Bertline*	310 Broome st	Sun	April 3, 1881
Andrew O'Donnell*	Summit Hotel	Star	April 8, 1881
Sophia Vensere*	200 West 56th st	Tribune	April 8, 1881
Frank Watson†	Van Dyke House	World	May 9, 1881
John McCarty†	Grand Union Hotel	Tribune	Sept. 29, 1881
Rev. Abijah Green*	Hamilton House	Times	Oct. 21, 1881
Joseph Caille*	405 6th Ave	Tribune	Nov. 11, 1881
Wm. Zimmerman*	Municipal Gas Works	Sun	Oct. 16, 1881
Michael Coyne*	St. Vincent Hotel	Herald	Jan. 27, 1881
Thomas J. Durand*	Occidental Hotel	Post	Feb. 16, 1882
Richd. A. Stryker*	Bridge Hotel	Telegram	Mar. 1, 1882
F. W. Hoffman*	N. River Hotel	Times	Mar. 2, 1882
Emil Acoreie†	Steamer Providence	Telegram	May 5, 1882
Lily J. Brandt*	do do	Telegram	May 5, 1882
James H. Langley*	Newport Steamer	Tribune	May 31, 1882
Lydia Coleman†	106 East 14th st	Tribune	May 31, 1882
Daughter of the above†	do	Tribune	May 31, 1882
Elliot Lavina†	176 Washington st.	Tribune	May 18, 1882
Wm. Meakin*	Eagle Hotel	Herald	June 2, 1882
Mrs. Meakin*	do	Herald	June 2, 1882
H. R. Covert*	French's Hotel	Herald	June 2, 1882
Wm. Thomas*	Van Dyke House	Tribune	June 27, 1882
E. D. Miller†	Cosmopolitan Hotel	Telegram	July 7, 1882
Franz Stark†	Castle Garden Hotel.	Times	July 7, 1882
M. Hartman†	Broadway Hotel	World	Aug. 21, 1882
Georavini Romanolle†	70 James st	Herald	Aug. 13, 1882
Angelo Lammino†	do	Herald	Aug. 13, 1882
Henry Conklin†	108 South st	Telegram	Sept. 20, 1882
Jennie E. Walcott*	14 West 28th st	Herald	Oct. 26, 1882
Emma Straus*	Glen Island Hotel	Telegram	Oct. 7, 1882
Timothy Kelly*	2297 4th Ave.	Telegram	Oct. 27, 1882
Daniel Leary*	1 Chambers st	Herald	Nov. 18, 1882
H. Robt. Petri*	65 Bowery	Times	Nov. 19, 1882
James Walker*	Occidental Hotel	Telegram	Nov. 22, 1882
Annie Stademeyer*	47 Bowery	Times	Nov. 30, 1882
Honora Mapiney*	4 Attorney st	Telegram	Dec. 15, 1882
D. A. Flanagan†	6th Ave cor 44th st	Tribune	Dec. 28, 1882
Andrew L. Culver*	112 West st	Sun	Jan. 10, 1883
Arthur Scholfield*	Hotel St. Stephen.	Sun	Jan. 20, 1883
Fernowsky†	30 Bowery	Tribune	Jan. 27, 1883
Christian J. Okeburg†	St. Andre Hotel	Telegram	Feb. 17, 1883
Johnston†	Steele's Hotel	Morn. Journ'l.	Feb. 21, 1883
Cannon†	do do	Morn. Journ'l.	Feb. 21, 1883
J. Lawrence*	Putnam House	Telegram	Mar. 1, 1883
Cortney Goodwin†	25 Coenties Slip	Morn. Journ'l.	Mar. 2, 1883
Matilda Hogfeldt*	296 Sackett st.	Union	April 15, 1881
Patrick Cook*	Fulton Mun. Gas Wks.	Union-Argus	July 11, 1881
John Agius*	Clinton House	Union-Argus	Oct. 13, 1881
W. King, of Vermont†	Clinton House	Eagle	May 13. 1882
Wm. Huske*	Annex Hotel, 12 Fulton	Eagle	Oct. 9, 1882
Theodore Hastke*	do do do	Eagle	Oct. 9, 1882
Susan Fendick*	111 Green Place	Eagle	Oct. 28, 1882

* Dead. † Suffocated.

Theories may be retracted and statements modified; but here is a record that should attract the attention of those whose care it is to protect the public health; and no amount of explanation can bring back to life those who have already died from the effects of the poison. The water gas itself is but a carburetted poison. Its insidious influences have often, no doubt, been felt by those who did not know what was affecting them, and there are doubtless hundreds of cases never mentioned in any newspaper where illness, disease, and ultimate death have occurred from inhaling this dangerous element. If one hundred people are killed in five years in New York, where only two-fifths of the gas is carburetted poison, what would the number have been if all the gas sold were of this poisonous character? Are the statistics of the Health Department arranged for this new order of things? A new column will be required, headed "killed by water gas." It would seem that a new source of increase in the death rate would attract the attention of the health authorities; and that they could not much longer disregard facts like those submitted above.

NO CHARTER GRANTED FOR WASHINGTON, D. C.

In order to correct a mistaken impression which exists in some quarters, we desire to state, and do state, that a charter *was not* granted to the United States Gas and Fuel Company for the city of Washington, District of Columbia.

THE ROSS STEAM STOKING MACHINES.

It gives us no small degree of pleasure to be enabled to chronicle the fact that the Ross steam stoking machinery continues to give great satisfaction to those who have had it installed in their works. The Manhattan Gas Light Company, of New York City, have employed, and are now working, two dischargers at each of their stations. These dischargers are operated by six men, (three men handling two dischargers at each station) and are "drawing" 120 benches of sixes every four hours. The work which is being done by them is thorough and satisfactory in every particular. The Brooklyn Gas Light Company, of Brooklyn, N. Y., have adopted and are using the dischargers. The Nine Elms station of the London Gas Light Company, London, England, which was the first English company to install the Ross' stoker, has just given an order for three pairs of the machines, so well satisfied were its representatives with the work accomplished by the experimental pair set up in 1881. The Birmingham corporation (through Chas. Hunt, its engineer,) has sent an order for two pairs. The Marseilles Gas Light Company, of Marseilles, France, erected one pair of the machines last year, and are now completing the building of a second pair. The new works now being built at Cincinnati will be fully equipped with four pairs of machines.

The claims of efficiency and practicability put forth by the United States Steam Stoking Company have been more than verified in every instance; and the success attending the introduction of these steam stoking machines must be as gratifying to the gas fraternity of this country as it is to the inventor of the system.

Street Lighting in Brooklyn, N. Y.

The Brooklyn (N. Y.) Board of Aldermen has earned for itself an unenviable reputation. It is not such a long time since that a majority of this model (?) body served out a sentence in the Raymond Street Jail, and it would appear as if the atmosphere of the said jail was so homelike and natural that that they would like to go back there again. The gas companies of the city, at the invitation of the city authorities, sent in bids for lighting the public lamps for the current year; and the figures presented were as follows. We also give the figures which represented the cost of doing the same work in 1882.

Company	1882.	1883.
Brooklyn	$20 00	$19 80
Citizens	23 40	23 20
Metropolitan	23 40	23 20
People's	23 40	23 20
Nassau	23 40	23 20
Williamsburgh	23 00	22 80

The Committee on Lamps and Gas had these bids in its possession since the early part of January of this year, and still no action has been taken. The Brooklyn *Daily Eagle*, a newspaper whose reputation is national, and whose utterances always command attention, contained in its issue of March 6th the following allusion to this matter of street lighting in Brooklyn. We make the following extracts, and we certainly think they explain themselves:

"The most important matter before the Aldermen yesterday was that of the gas contracts for the current year. For reasons which may be surmised and need not be stated, a majority of the members are in no hurry to act. They are waiting to receive some sort of explanation from the companies. That the terms of the bids put in are plain enough, and the quality of the gas well known, does not relieve these ward statesmen from their uncertainty. The light they want before closing the bargain appears to be of the Aladin kind. This is a familiar performance. We have it every year. If the gas men cared to let the public into their secrets it would be shown that to furnish light at a reasonable price is only one of their difficulties. The price they must pay for permission to furnish it is an annual source of annoyance. Not to put too fine a point on the matter they have, unless common report and common appearances are misleading, to submit to something like political blackmail. * *

"The gas companies are undoubtedly able to take care of themselves, and they will, we may be sure, do so by forcing the city to reimburse them for every cent they expend on our ward representatives."

The Management of Small Gas Works.

By C. J. Russell Humphreys.

[Continued from page 100.]

Having decided on a proper site for the works, the same caution and good judgment must be exercised in planning the general layout of the buildings, with particular reference to the economical conduct of all the operations of gas making, as well as the allowance of the various parts being extended as increasing business may demand, without needless demolition of existing plant. If the ground selected have a water front, it will be well to push on at once with the construction of suitable dockage facilities, so that the most may be made of this advantage in landing the different building materials.

That the relative positions of the different structures must be governed in great measure by the general formation of the plot chosen, is clear enough; but there are certain points in this matter which it is important to secure. Thus the coal shed and retort house must be in close juxtaposition, and a similar relationship will have to exist between the purifying house and lime shed, while it is also desirable to have the two pairs of buildings at some distance apart, so as to reduce the chances of accidents in the purifying house. Of course, the dimensions of the several parts of the plant will depend entirely on the amount of gas which the works will be required to make; and some of the remarks elicited by the consideration of the site will apply here. The capacity of the factory should rather err on the side of being too large than too small; still, it is well not to go to extremes in this regard. Such parts of the plant as the general connecting pipes, with the corresponding valves, which cannot be enlarged at a reasonable expense, may well be made equal to the possible future growth of the concern during 20 years; but it would be imprudent to lock up capital by building other sections of the plant (which can be easily and cheaply expanded) on a similar scale. The question then arises, what rule may safely be followed in determining the probable immediate demand for gas and its rate of increase. Plainly there is none of universal application. Any calculation based merely on the population of the district to be supplied, without reference to the characteristics of the place, cannot but be misleading. The surest method of reaching the object sought is to determine from an actual canvas the probable number of consumers to be obtained. Ordinary private consumers and stores can be averaged at 25,000 feet a year. In street lighting it is usual to allow 7,000 feet of gas per 100 running feet of roadway to be lighted. In addition to these demands for light, allowance must be made for factories, if there be any.

Having arrived at the probable daily average demand for gas, the next point to be determined will be the maximum for the same period. For a town where there are few manufactories, it will be safe to increase the average outsend by 60 per cent. In other words, the heaviest demand during 24 hours will be 160 per cent. of the average figure for a like period. For a manufacturing town, the maximum outsend may be made double the average.

The capital required per thousand feet of gas sold must also be considered. This will likewise vary according to circumstances, particularly as regards the price of building materials, and also the extent of pipe to be laid to sell a given amount of gas. Speaking generally, capital at the rate of $7 per thousand feet of gas made ought to be enough.

By this time the reader may be ready with the criticism that we have gone about our task in a very roundabout way—putting the cart before the horse, in first selecting our site and then considering the size of the works to be erected. This stricture must not be passed too hastily. If we had first figured out the exact area of land required, should we, in all likelihood, have been able to purchase a plot of the exact size desired? On the contrary, sites suitable to our purpose are so rare that we are obliged in a measure to adapt our works to the extent and location of the land we are able to procure. Moreover, we are dealing only with small undertakings; so there is little chance of falling into serious error. And while we are engaged in the preliminary work of locating the works, we may become better posted regarding the possibilities of the town in which we are working, thus being less liable to make a mistake in fixing on the size of the plant to be erected.

With these general principles in view, let us suppose that we have been called upon to light a town of 6,000 inhabitants, the character of which may be termed residential, having, however, a few small factories scattered through the district. At the outset we will examine, in a cursory way, the territory we have to cover; and we will obtain from such an inspection a very good idea of the size of the works required. We can then turn our attention to the selection of a site for our prospective plant. If the town be on a water-way, we shall endeavor to make our purchase from land bordering thereon, or at least secure the refusal of a suitable plot in this section. This done, we can consider the advisability of investing in cheaper property without the advantage of the water. We will presume that we find that $5,000 can be saved in the cost of our real estate taking a piece of the latter nature; but having determined that the consumption of gas will be about 10,000,000 feet per year in the near future, and having from examination found the soil of the water front property well suited to our purpose, we select the latter location. From what we have said before it is clear that if the piece chosen were made ground or meadow land, we would have to take into consideration the extra cost of erecting the building. On the other hand, land of such character would not cost much more than firm ground in a less advantageous situation; so that our allowance of $5,000 extra on capital account will be the fairest suppositious case we can take.

We may also remark here that it it must not be supposed that, because a piece of property is a considerable distance from the water, it necessarily follows that the erection of the buildings will be less costly than if it were situated along the river or harbor, as the case may be; for the truth is, we may meet with a veritable quagmire in an inland position, and good ground may be found along the water front.

We will say the plot we have accepted is 275 ft. deep, with a frontage on the bay or river of 175 ft.; but, as it stretches back, the breadth is increased so that on the street parallel with the water it will measure 250 ft. This will give plenty of room without buying a large water front.

After a better acquaintance with the town we are to supply, gained during our prospective work, we have decided that we may reckon on having 200 private consumers and the lighting of about 45,000 ft. of roadway, which will take 300 lamps, while three factories, of 100 burners each and using light for 300 hours a year, will give us 450,000 feet. We have then—

200 private consumers, at 25,000 feet	5,000,000 feet.
300 lamps, at 10,000 feet	3,000,000 "
3 factories	450,000 "
Total	8,450,000 feet.

We will therefore design the works so that they will be equal to an annual make of 12,000,000 feet. Some parts of the plant will be made equal to an increase of 66 per cent. on this figure. Our average daily outsend will be 32,000; maximum, 50,000; minimum, 20,000.

The coal shed will be placed at a right angle with the general line of the water front, and will be on a line with the dock, so that an elevated track can be run in a straight line between the two points. This tramway will be at a height of 18 feet, and the hoisting arrangements will be such as to admit of the coal being raised from the vessel and dumped directly into the cars. The shed will be 65 ft. long by 25 ft. in width; this will give us room for 500 tons of coal, or, say, four months' consumption of the winter season. The retort house will be 58 ft. long by 38 ft. in width; it will be parallel with the coal shed, with a roadway of 20 ft. running between. The ends of the two buildings furthest from the water will be on a line. The retort house will be started at a point 65 feet from the water. Adjoining this will be the engine room, 38 ft. wide and 15 ft. long. Next in order will be the scrubber room, 20 ft. by 38 ft., a portion of which will be partitioned off to form a store room. The purifying house, the breadth of the building and 35 ft. long, will adjoin the scrubber room, after which will come the lime store, 28 ft. by 38 ft.

Parallel with this line of buildings across the 20 ft. roadway and separated from the coal shed by a passage-way of 12½ ft., will be the shop, 20 by 18 ft. Adjoining this will be the meter room, 20 ft. by 9, which will occupy half the width of the building, the remaining 9 feet being utilized as a governor house, while the office and photometer room, 40 ft. by 18, will end this row of buildings.

Looking from the street through the gate-way toward the water, the lime room, purifying, scrubber, engine room and retort house form a continuous building on the right; on the left will be the office, governor and meter rooms, shop and coal shed. Each row of buildings will stop short of the street by 58 ft. By this means future extensions will be facilitated, while for the present a well kept lawn will not detract from the aspect of our imaginary works. The gas-holder house, to accommodate a holder 70 ft. in diameter, 20 ft. high, will stand to the left of the office building viewed from the gate as before.

The two advantages gained by this layout of the plant are: first, the works can be run economically as regards labor; second, they can be enlarged without changing the relative positions of the buildings. Thus, the retort house and coal shed can be extended towards the water; the lime store may be converted into a purifying room; then by extending the building toward the highway, the lime will be provided for.

We may as well state here that it is intended to make the retort house in two stories; the lower ground floor will take the place of a coke shed, and as we propose to make a market for our coke if it fail to sell readily, this will give ample storage room. The benches will be built on arches in lieu of the solid stone foundations commonly made use of. The range will consist of three arches 7 ft. 6 ins. wide, and one arch of 3 ft. 6 ins.; we have room for another arch of the former size when required. The distance from floor line to arch will be 9 ft. Above the arches we will lay 3 ft. of brickwork; the

buttresses at the end of the stack will be 3 ft. thick, the whole being well braced with buck staves and 1 in. tie rods both ways. We will leave a space of 6 ft. between the rear wall of the retort house and the stack. At the end adjoining the engine room a clearance of 10½ ft. will be left. The retorts used will be 15 by 26 ins. Each of the three arches would be of sufficient size to contain six retorts, but in so small a works it would be an unwise procedure to make all the benches sixes as it would necessitate keeping more retorts in action than could be utilized; we will therefore have, at the outset, one bed of six and two of four retorts; the latter, where it becomes necessary to rebuild them, can be converted into sixes if the consumption warrant the change. The small arch of 3½ ft. will accommodate two retorts, and will be found very useful in certain seasons of the year in meeting the varying demands for gas. We have made the arch narrow in order that it may be heated up readily. For the same reason we will make the interior of the setting very light, only using enough tiles to shield the retort over the furnace.

It might be thought that a bench of iron retorts would be better adapted to our purpose as they can be easily and safely fired up and let down. Our preference, however, is for the form we have outlined, and we expect them to last well even though their service be of an intermittent nature. The style of setting we shall adopt will have a division wall and return flue; it was for this reason we placed the stack 6 ft. away from the rear of the retort house; for the weakness of this style of bench is that the flue opening at the back of the bed becomes choked up, and so effectually stops the draught. With this clearance we shall be able to gain access to this vulnerable point in the setting and remove any obstruction.

The chimneys, two for each bed, will be carried up 4 ft. above the stack. A generator furnace answering for large works may be an accomplished fact, but, as much as we are in favor of this mode of heating retorts, we would hesitate to recommend any style for so small a works as that of which we are treating. The main reason why we would defer the introduction of the improved furnace is because of the difficulty of controlling the heat when the demand for gas is light and the retorts have to remain idle for a few hours. We therefore feel constrained to use the common furnace for the present and will make it 15 inches wide at the grate bars, increasing to 17 inches and again contracting to the original dimension at the level of the bottom retorts. As we have made the retort house in two stories we can easily introduce the generator furnace if in the future we succeed in finding one suited to our necessities.

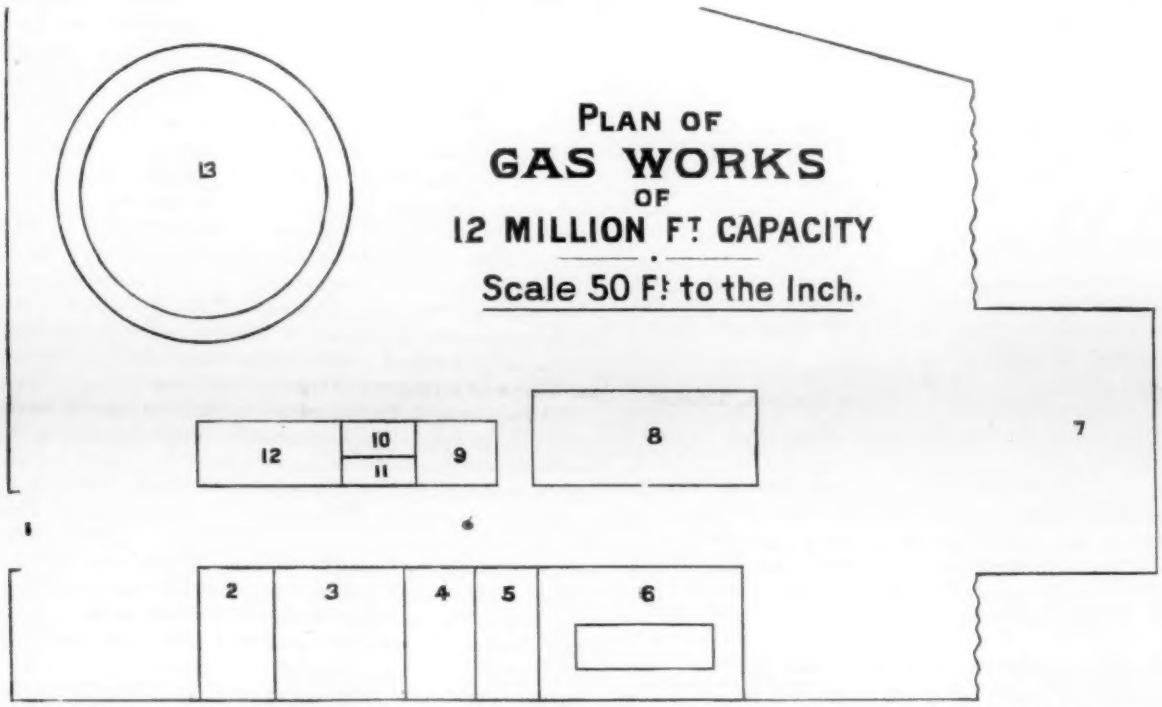
As there is a great deal of heat lost by radiation from the front of the bench we will make this wall two bricks thick, while the rear one will be 9 inches heavier.

Six latticed windows will give light to the coke floor, as well as assist in the ventilation; in the latter work they will be supplemented by three shafts carried up through the roof. At the end of the building will be an entrance for the coke carts.

The retort house will be lighted by six windows, of heavy glass, while all the openings for ventilation will be above the retort stack. The flooring will be of iron grating, a section of which, parallel with the face of the stack, will be made smooth in order that the coal wagon may be moved back and forth with the least labor. A set of stairs will connect the two levels of the house, and midway in the length of the building will be placed a hydraulic lift for elevating the coal.

The style of coal wagon to be used is a sheet-iron box 6 ft. in length, 3½ ft. wide, 1 ft. 6 in. high, one of the long sides being made to let down. This wagon will be loaded in the coal shed, drawn to the hydraulic lift and elevated to the retort house floor where it is weighed. The coal will be shoveled from the wagon direct into the retorts, straight handled scoops being used for that purpose. The furnaces will be fired with hot coke. As some firing will have to be done between charges, it will be necessary to draw some of the coke on to the upper floor; the balance will of course drop through the opening to the lower section.

The boiler of fifteen-horse power will be placed in the retort house; as we have 20 ft. between the face of the benches and the building wall, we will have plenty of room for it. We shall use the old style retort lids, but cotter bars will be made to revolve. The ascension pipes will be 6 in. in diameter, the dips measuring 2 in. or less. The hydraulic main will be set on crutches, which will raise it 2 ft. from the top of the stack. The main will be made with six dip pipe openings for each of the three arches.



1. Entrance.
2. Lime Room.
3. Purifying Room.
4. Scrubber Room.
5. Engine Room.
6. Retort Room.
7. Dock.
8. Coal Shed.
9. Shop.
10. Governor Room.
11. Meter Room.
12. Offices.
13. Holder.

For dispensing with the hydraulic seal we will employ a 2 in. stop cock, placed on a pipe connecting the dip pipe with the top of the main. The cock will consist of a brass plug working in an iron body. Our experience has been that in such a position the former metal will wear better than iron; the tar quickly forms a coating over the interior of the cock and prevents the ammonia from acting on the brass. The cock will be opened and shut by a lever worked from the retort house floor. This contrivance, if not equal to some of the patented anti-dips, will certainly have the advantage as regards cost. The tar outlet will be connected to the bottom of the main, and will be furnished with an adjustable overflow.

[To be continued.]

DANGEROUS PRACTICAL JOKES.—The introduction of the electric light into some of the Pittsburgh mills gave the practical jokers among the workmen many chances to play tricks upon their fellow toilers. Sometimes a green hand who did not understand the peculiarities of the invisible current was induced to light his pipe from the light by means of an iron rod. The joke was played once too often, and one victim was killed by the shock. Not long since a workman attempted to fix a defective carbon point by means of a long steel rod; but when the end of the rod came in contact with the light he dropped. The next morning he was told to let an expert attend to the light in the future—an order which he willingly obeyed.

[Official Report.—Continued from page 103.]

Thirteenth Annual Meeting of the New England Association of Gas Engineers.

Held at Young's Hotel, Boston, Mass., Feb. 21 and 22, 1883.

Morning Session—Feb. 21.

CORRESPONDENCE.

The following correspondence was read by the Secretary:

Office of Taunton Gas Light Co.,
Taunton, Mass., May 1, 1882.

Mr. G. B. Neal: Dear Sir—It becomes my painful and sad duty to inform you of the death, at 3 A.M. Sunday, of our superintendent and treasurer, Mr. Edwin Keith. Funeral services will be held at his late residence on Tuesday, 2 P.M.

Very truly,
Taunton Gas Lt. Co.
By Henry B. Leach.

Portsmouth, Mass., April 25, 1882.

Geo. B. Neal, Esq.: Dear Sir—Yours of April 20, with receipt, was received in due time. Mr. Akerman died Nov. 22, 1881. I inclose a notice of his death framed by our company at the annual meeting in February last:

"Since our last annual meeting Mr. Aaron Akerman, our superintendent, has passed away. For two years or more Mr. Akerman was a great and constant sufferer from a severe affection, which he endured with patience and manly fortitude, attending to the duties of his office till within a few days of his death. On the resignation of our former superintendent, Mr. John Trundy, in 1870, Mr. Akerman was appointed his successor. Mr. Akerman had a mind well adapted to fill the position, having great courage, rare powers of observation, good knowledge of human nature, mechanical skill, economy, sound judgment, and a valuable experience gained from many years of active business life.

"*Resolved*, That, fully appreciating Mr. Akerman's integrity, great industry, and entire devotion to his official duties, we accord to him no small share in the successful management of the business operations of the company.

"*Resolved*, That we extend to his family our warmest sympathy and respect in this hour of their affliction."

Very truly yours,
David Kimball, Treasurer.

Springfield, Mass., Sept. 14, 1882.

Geo. B. Neal, Esq.: Dear Sir—At the hands of our mutual friend, Mr. Jos. L. Hallett, I am in receipt of the copy of the Proceedings of the Association of Gas Engineers presented to my dear mother, and for her and for myself I beg to make to you hearty acknowledgements. The tender respect and hallowed friendship paid to father's memory by the gentlemen of your Association bring to us all comfort, beautiful and sustaining, and also sentiments of just pride that father's friends were *such* men. Thank God that father was spared the bolt that has shattered our hearts a second time. He was an oak, and could not have bent. My loss grows greater with each new day of life.

With sentiments of profound respect, I am, cordially and sincerely,
Geo. Dwight, Jr.

The Secretary also read a letter from Mrs. Colbath, acknowledging the receipt of a copy of the Proceedings of the Association at its last annual meeting, containing the resolutions, etc., of respect to the memory of her deceased husband, Charles S. Colbath, adopted by the Association.

The names of William Badger and Isaac R. Scott were dropped from the roll of members at their own request.

PAPERS TO BE READ.

The Secretary reported that at a meeting of the Directors papers prepared by Messrs. Learned, Sherman, Allyn, and Yorke had been approved, and would be read before the Association.

TREASURER'S REPORT.

The Treasurer reported as follows:

Receipts during past year	$610 72
Expenditures	598 55
Balance on hand	$12 17
Permanent fund—	
Invested in Charlestown Five Cents Savings Bank.	$300 00
Warren Institution for Savings.	400 00
Total	$700 00

Messrs. Rollins and Allyn, Auditing Committee, reported that they had examined the Treasurer's report and found it to be correct.

REPORTS OF COMMITTEES.

Mr. Nettleton—As chairman of the Committee on Coke Statistics, I would report that early in the year I sent out notices, or rather a circular letter, to all the members of the Association, inclosing a list of questions to which I requested answers. A few replies were received, but not sufficient, I thought, to be published, or to warrant making a compilation. I sent another letter, requesting replies, and received a few more. All, however, did not reply, nor were the answers particularly full of information; not nearly so full as I had hoped they would be. Such statistics as were received were tabulated by me, and copies were sent to each member. For myself, I think I have received benefit enough from the statistics to pay me for the labor I had in gathering them; and I trust they will be of equal benefit to others.

The Secretary—At the semi-annual meeting held in August, 1881, it was voted that the Secretary be requested to procure a brief sketch of the life of each member of the Association, so far as it is connected with the profession. Mr. Slater and myself were appointed a committee for that purpose. We have prepared a book for the signatures of members, and we have also sent to every member a circular requesting them to furnish us with certain statistics. I have received replies from 44 members. It is the purpose of the committee, when reports shall have been received from all the members, to tabulate them. This matter was taken up at the suggestion of the President; and I think he can perhaps explain the purpose of seeking the information better than I can.

The President—Our membership is now quite large; occasionally a member withdraws from the Association, or his name is dropped from the roll; and it was thought it might be interesting to those of us who remain to have a sketch prepared of the life of each one connected with us in the gas industry. For this purpose a committee was appointed, and they have solicited certain information from the members in reply to questions which have been sent to each of our associates. The committee was not authorized to tabulate the information which they might receive; but I think it would be well to put the data furnished in some convenient form, and then send a copy to each member.

On motion of Mr. Allyn, the committee was instructed to tabulate the answers, when they shall have been received from all, and to distribute copies thereof among the members.

Mr. Stiness—I notice by the report of the proceedings that at the last annual meeting the Committee on Statistics was continued, and requested to procure additional data. Col. Stedman is the chairman of that committee, and I hope he is prepared to report at this time.

The President—Is the Committee on Statistics ready to report?

Mr. Stedman—The Committee failed to come together, and consequently were unable to prepare a list of questions. Doubtless, if we had prepared and distributed such a list, the members of the Association would have made haste not to answer. That has been our experience heretofore. The Committee did not see fit to come together because our success in previous years in getting intelligent replies to our questions was very discouraging. Our efforts have always resulted in failure, except in one memorable year, when we did receive sufficient data to prepare a statistical table, and had it printed. Since then it has seemed to be a waste of effort and of energy, in view of the very limited number of answers which the members were willing to send us in reply to the questions asked them. For that reason the Committee have not, during the last year, made any very urgent efforts to gather statistics. I have to apologize, for myself and for the other members of the Committee, for not being able to make a more interesting report.

Mr. Stiness—The explanation of Mr. Stedman may be very satisfactory to him, but it is not very satisfactory to me. If he had made as diligent an effort to obtain a meeeting of the Committee as he makes in other matters of business in which he may be engaged, I have no doubt he would be able to present a report to-day. I say this in all kindness to him. I know that he has been engaged in another association, and that he has been able to prepare what I consider a very interesting report. I feel that it is merely from a lack of diligence on his part that he has not been able to give us to-day what he is so capable of doing; and therefore I feel that he is in some slight measure worthy of a little friendly criticism from the Association. But, all joking aside, I feel that for once we have had prepared a table of our doings for a year which was not not only a credit, but a vast benefit to all of us. I thought, when that matter was inaugurated, that what was done would be a landmark to us; and I hoped it would be continued. I am very sorry that there appears to be, as Col. Stedman has said, a lack of interest among some of the leading companies of New England, and an unwillingness to furnish statements which I know would be kept by every gas man in his own breast. I feel that this Association owes it to itself to take a very decided stand in this matter of statistical information; that it should adopt the good old maxim of give and take, and let each man know what his fellow member does. I make no motion in the matter; I only express my regret that Col. Stedman has not been more diligent in the matter than is indicated by his report.

The President—Has any member any motion to make with regard to continuing this Committee?

Mr. Allyn—I move that the Committee on Statistics be continued, and that Mr. Stiness be added to the Committee.

Mr. Stedman—As the Committee is already so large that it has been found difficult to get all the members together, I suggest that the present chairman be dropped, and that Mr. Stiness be substituted in his stead.

The motion of Mr. Allyn was agreed to.

NOMINATING COMMITTEE.

The President appointed the following gentlemen as the committee to nominate officers for the ensuing year: J. H. Rollins, C. D. Lamson, A. M. Norton, F. C. Sherman, C. S. Spaulding.

Mr. Greenough—As the time for general business has now arrived, and we may take up any matter, there is something which I wish to bring before the Association. Probably no member has failed to note and to inquire into the cause of the absence of our friend Major Dresser. Many of us know that he has been greatly afflicted, and that he is still in a very uncomfortable condition, the result of which we can only look forward to with the best possible hope. There is no one who knows him who does not regret his absence and sympathize with him in his trouble. I think it would be kind and fitting for this Association to send to him a message which would convey to him an expression of our sympathy, and give him the assurance that in his absence he is not forgotten. I therefore offer the following resolution, and move that, upon its adoption, it be signed by the President and Secretary, and be telegraphed to him.

Resolved, That we hereby express our sincere sympathy with our friend, Major Dresser, in those personal and domestic troubles in which he has shown so much patience and cheerful courage. We miss him greatly at this meeting; and we wish him to know that he has the heartfelt desire for his speedy recovery of every member of the New England Association of Gas Engineers.

The President—I most heartily concur in the sentiments expressed by Mr. Greenough with regard to Major Dresser. We all know how deep an interest he has manifested in the welfare of our Association ever since he has been connected with the AMERICAN GAS LIGHT JOURNAL. We have always rejoiced to welcome him at our meetings; he has been ever ready to aid and encourage us with his stores of information, and even through all his domestic affliction and personal suffering we have received something from his pen in every number of the JOURNAL.

Mr. Cabot—I most heartily respond to the sentiments expressed by Mr. Greenough, and second his motion. I hope the resolution will be unanimously adopted, and forwarded to him as early as possible.

The resolution was unanimously adopted and forwarded to Major Dresser.

On the motion of Mr. Stiness, the President appointed Messrs. Thos. R. Martin and David Moore a committee to prepare suitable resolutions as to the death of Mr. Aaron Akerman. The President also appointed Messrs. H. B. Leach and E. G. Pratt a committee to prepare like resolutions as to the death of Mr. Edward Keith.

REPORT OF NOMINATING COMMITTEE.

Mr. Rollins—The committee appointed to nominate officers for the ensuing year make the following report:

For President—A. B. Slater.

For Vice-Presidents—M. S. Greenough and J. P. Harbison.

For Directors—A. M. Norton, J. L. Hallett, C. H. Nettleton, William Yorke, and S. G. Stiness.

For Secretary and Treasurer—Geo. B. Neal.

I am also instructed by the committee to state that they recommend the insertion of a clause in our by-laws to the effect that in the future the President shall hold office for only one year. They suggest a by-law similar to that adopted by the American Association.

Mr. Stiness—I notice that my name is proposed as one of the Directors of the Association. I well remember a remark which Mr. Greenough made when he retired from the office of President of the Association—that he thought we should follow in the line of policy adopted by the English Association; that ex-presidents should be relieved from any further service as officers of the Association. That suggestion met my hearty approval at that time, as it does now. I therefore earnestly request the committee to reconsider their action in naming me as a Director. I have a twofold reason for asking this at this time. I am now more pressed with the cares of business than I have been for many years, and expect to be thus engaged during the coming year. The duty which my very kind friend from Newport has fixed upon me to-day is an added burden to one who is already well loaded with the active business of life. I am getting well on in years, and I feel it to be a duty to myself to decline official duties whenever they bring additional burdens. I therefore request the committee, as a matter of personal kindness, to insert the name of some other member as a Director in place of mine. I fully appreciate the honor they seek to do me, as I have appreciated the honors conferred upon me in the past; but I must most respectfully decline the office, and ask them to name some one else.

The Secretary—It seemed to be the understanding that past-presidents should be relieved from further duty as officers of the Association, and therefore, in preparing the list of officers in the published Proceedings, I have placed their names together at the foot of the list; and the name of Mr. Stiness appears, with those of Messrs. Greenough, Cabot, and Stedman. In accordance with the understanding which has obtained in the past, I think it proper that Mr. Stiness should be excused from acting as Director.

Mr. Rollins—The committee considered this matter in making the nominations. Their desire was to secure a board of workers. As Mr. Stiness had already accepted a nomination, given through the kindness of his friend Mr. Stedman, upon the Committee on Statistics, we saw no reason why he should be relieved from acting as a Director. We do not think he should be relieved. We want some member from Rhode Island who shall be a worker in that board. As we had the President from Rhode Island, and as we had on a committee one or two other members who had not done anything, we were forced to put on our friend Mr. Stiness. We thought the matter over in all its bearings, and do not think that we can reconsider it.

The President—So far as I am concerned, I think the recommendation of the Committee is a very good one. I refer to the suggestion that the term of service of the President shall be limited to one year. This plan has been adopted by the American Association, and by other like organizations; and I hoped the committee would omit my name from the nominations. You have certainly had a great deal of patience with me in my inexperience and lack of ability to properly perform the duties of President, and for this I am grateful; but I think the recommendation of the committee deserves your serious consideration; and this is a good time to act upon it, and to permit me to retire at the end of my year of service. The question now is whether Mr. Stiness shall be excused from serving as Director.

Mr. Lamson—I hope Mr. Stiness will conclude to stand. It was thought best by the committee to make an entirely new list of Directors, and to draw in some members who had not before served in any official capacity, with a view of infusing new life into the meetings of the Association. We accordingly wiped out the entire list as it stood last year, and selected the new men—one from each State. When we came to the State of Rhode Island we had only three names to select from—our President, Mr. Stiness, and Mr. Stedman. As Mr. Stedman had lately served as President, we could not do otherwise than select Mr. Stiness. He need not necessarily be the most active member of the board; he may act as the steadying man of the other new members. I hope he will consent to stand. I do not think that because a man has once been the President he should be excused ever after from acting in any official capacity in the Association. We need to profit by their larger experience. The committee is unanimous in the opinion that the President should serve but one year, and think it desirable that the recommendation be now made, so that it may be acted upon at our next annual meeting. While our present President may be, as he states, entirely willing to retire at the end of one year of service, yet, as it has been the custom heretofore to elect our President to a second term, a failure to do so at this time might have the appearance of a slight, where certainly none is intended. The committee therefore simply make the suggestion at this time, with a view to having it acted upon at the next meeting.

The President—I am not at all sensitive in respect to this matter. I think the suggestion is a wise one, and I shall not feel at all slighted by having it acted upon at this time.

Mr. Rollins—I hope our worthy brother from Rhode Island will consent to act as Director. He did very nicely as President, and we hope for much from him as director. I hope, if he is elected, he will consent to act.

On motion of Mr. Tabor the report of the Committee on Nominations was accepted. The President having appointed Mr. Cabot to cast the ballot of the Association for the nominees, the ballot was so cast, and they were declared duly elected officers of the Association for the ensuing year.

On motion of Mr. Neal, it was voted that the time and place of holding the semi-annual meeting be left with the Directors, with full power to make all necessary arrangements for the same.

The Association here took a recess until three o'clock P.M.

AFTERNOON SESSION—FEB. 21.

Mr. W. A. Learned read the following paper on

HALF HOURLY OBSERVATIONS OF THE YIELD AND CANDLE POWER OF GAS.

Mr. President and Gentlemen of the Association:—I present herewith the results of some experiments made at the Newton and Watertown Gas Works to determine the amount of gas obtained from coal at regular intervals during the charge. The pressure gauge and jet photometer were taken every five minutes, the meter every fifteen minutes. It was my intention to use

the bar photometer, but the pulsations of the exhauster prevented me from so doing.

Test No. 1.—Feb 16, 1:30 P.M.

3,600 pounds Penn coal; 18 retorts; charge, 200 pounds; duration, 4 hours. The gas was tested after it had passed all the apparatus, and just before it entered the meter.

Time. P.M.	Gas Made Each Half Hour.	Test Candle Power Each Half Hour.	Calculated Candle Power of Total Gas at the end of Each Half Hour.	Make per Pound, in Cubic Feet.	Pressure on Retort in Inches.	Candle Feet.
1:30						
2:00	3400	17.0	17.00	0.94	4-10ths	15.98
2:30	4400	20.5	18.97	2.16	3-10ths	40.97
3:00	3890	18.5	18.82	3.24	3-10ths	60.97
3:30	3290	16.5	18.37	4.15	2-10ths	76.23
4:00	2270	15.5	17.94	4.78	2-10ths	85.75
4:30	1070	14.5	17.74	5.07	2-10ths	89.95
5:00	400	14.0	17.66	5.18	2-10ths	91.47
5:30	170	13.0	17.61	5.23	1-10th	92.10

Test No. 2.—Feb. 16, 8 A.M.

3,400 pounds coal; 17 retorts. The jet photometer was located at a point before the gas passed the washer and purifiers.

Time. A.M.	Gas Made Each Half Hour.	Test Candle Power Each Half Hour.	Calculated Candle Power of Total Gas at the end of Each Half Hour.	Make per Pound, in Cubic Feet.	Pressure on Retort in Inches.	Candle Feet.
8:00						
8:30	3830	16.5	16.50	1.13	3-10ths	18.64
9:00	4070	18.0	17.52	2.33	3-10ths	40.82
9:30	3940	16.5	17.01	3.49	2-10ths	59.36
10:00	3060	15.5	16.70	4.39	2-10ths	73.31
10:30	1990	14.0	16.37	4.97	1-10th	81.35
11:00	800	13.5	16.00	5.20	1-10th	83.20
11:30	240	13.5	16.00	5.27	1-10th	84.32
12:00	95	13.0	15.97	5.30	1-10th	84.64

Test No. 3.—Feb. 17, 1:30 P.M.

3,400 pounds coal; 17 retorts. The photometer was placed just after the exhauster.

Time. P.M.	Gas Made Each Half Hour.	Test Candle Power Each Half Hour.	Calculated Candle Power of Total Gas at the end of Each Half Hour.	Make per Pound, in Cubic Feet.	Pressure on Retort in Inches.	Candle Feet.
1:30						
2:00	4280	16.0	16.00	1.26	5-10ths	20.16
2:30	4500	16.0	16.00	2.58	2-10ths	41.28
3:00	4200	15.5	15.83	3.81	2-10ths	50.31
3:30	3120	13.5	15.38	4.73	Level	72.74
4:00	1770	11.0	14.90	5.21	1-10th	77.62
4:30	550	10.0	14.76	5.41	2-10ths	79.85
5:00	170	9.5	14.69	5.46	2-10ths	80.20
5:30	80	9.0	14.68	5.48	2-10ths	80.44

Discussion.

Mr. Stiness—It is all very well for Mr. Learned to end his paper with the remark that we can draw our own conclusions. I like to know the deductions which a man makes from his own experiments. After hearing his deductions we may be the better able to arrive at the information which we are seeking. From the character of the paper (it is of course practical in its application to all) I would like to have the member who has prepared it with so much care, and who has secured such accurate results, give us the deductions which he makes from his own paper; and I have no doubt such a statement would be highly interesting to all the members of the Association. I think the paper would be rendered of greater value to all of us if he would be a little more explicit in some of his statements, and would give us more in detail the deductions which he makes from his experiments. I thank him for the great care with which he has prepared it; but I think he should have an opportunity of making the further explanations which are, perhaps, essential to its more perfect understanding.

The President—Perhaps Mr. Learned can tell us whether the experiments which he has made have suggested to him any idea as to the proper duration of a charge.

Mr. Learned—The reason why I did not state any inferences of my own from these experiments was, that, not having had a very long practical experience, I preferred to leave the deductions to be made by those who were more competent, from longer experience, to draw correct conclusions. There is one thing which I have determined upon, as the result of my experiments; and that is, to run three-hour charges with the benches which we have, and as they are. I think it will pay me to do so. At any rate I am going to try it.

Mr. Stiness—That is what I thought.

Mr. Coggshall—Have you made any comparison between the bar photometer and the jet photometer, as to the various degrees of candle power in the different charges?

Mr. Learned—The Jones photometer, which I used, is supposed to be correct. I have tested it by the bar photometer at various times, and I believe it to be correct.

The President—Do you find any special variations in pressure, in comparing it with the bar photometer, under various candle powers?

Mr. Learned—When I was making the test I had so much to do that I could not run the bar photometer. I found that there was such a variation in pressure on the bar photometer, when it was connected with the gas before it went into the meter, that I was not able to get a satisfactory test with it; and that was the reason why I took the jet photometer; and then I thought I would use it in different parts of the works to see what the variation of candle power was.

The President—Perhaps the governor of your bar photometer was not working properly.

Mr. Learned—That may be.

Mr. Stiness—You were taking directly from the exhauster, and you thought you must have a fluctuation from the exhauster upon the bar photometer, and the governor would not control it.

Mr. Learned—That is it.

Mr. Stiness—It would be a pretty good governor that would control it.

Mr. Coggshall—I made a similar test a few years ago, and the illuminating power of the gas, as tested by the bar photometer, did not, during the first half hour, get up to between 9 and 10-candle power. In the last, and fourth hour it was very low. It went up to about 26 candle power. I state this from recollection, and without having the data with me. After the first half hour it went up quite rapidly until it reached twenty-six and a fraction.

Mr. Cabot—This brings up the question whether, in the fourth and last hour, we are really gaining anything in running our charges; whether we would not be better off if we stopped at the end of the third hour; and whether we should not produce as much gas, of a higher illuminating power, as we do now, at the same cost, and without so much increase of candle power.

The President—You mean—whether the increased candle power would not overcome the difference in volume.

Mr. Cabot—Yes; that is a question which I have been thinking of for some time.

Mr. Lamson—The question of running retorts the fourth hour has connected with it many other questions than that of candle power. If you could afford to stop a particular retort, or bench of retorts, during the fourth hour of the charge, and either throw the gas away, or devote it to some other use, (such as heating the bench) you would undoubtedly get better candle power. But that would be neither economical nor practicable. It would require too much increase in expense, and too much complication in the machinery. To my mind the principal advantage gained in running the bench the fourth hour is the heating of the bench for the next charge. If you put in the charge cold you immediately reduce the temperature from 2,300° to 1,200°. You therefore need to have the retort very hot at the start. You need the fourth hour in order to keep the retort hot enough to receive the cold charge. Furthermore, you need the action of the light gases, passing through the stand-pipes to lift up the deposit which takes place in the early part of the charge. I fully believe that very much of the trouble which arises from three hour charges is due to the fact that you get such a deposit in your stand-pipes, in the early part of the charge, that, in a series of charges, the deposit clogs them. If, in the fourth hour, you have very little gas coming forward, that takes up the deposits, and prepares the apparatus for the next charge. I have come to that conclusion from experiments in burning three hour charges in connection with the Dieterich furnace. I find that almost invariably, wherever three hour charges have been tried, they have shortly been abandoned, and the parties have gone back to four hour charges. They have tried three hour charges in Germany, and with the same result.

Mr. Cabot—I hope that every member who has had any experience on this subject will give give us the benefit of it. We want all the light that we can get.

Mr. Stiness—The deduction which I made from hearing the paper read was that Mr. Learned did not think much of four hour charges, so far as regards the quantity of gas obtained in the fourth hour; and I was very happy when he so placed himself on the record. I believe there are parties here who have tried three hour charges, not merely as a matter of experiment, but as a regular daily working of the retort house. If I am not mistaken the President has, for quite a long time successively, run three hour charges; and from my own observation I am satisfied that the heats are not in any sense affected by the frequency of the charges, in that particular case. I think they are under a series of benches, which we may term the "common" benches, that is, benches fired in the common way. I am free to say, (and I care not how small the works are) that no gas works can afford to run a bench of retorts in what is termed the common way of firing, with the ordinary expenditure of coke, with four hour charges. Increased heats mean, of course, an increase in the quantity of coal which can be put into the retort. I have made experiments similar to those made by Mr. Learned; and I have often thought that, while I kept on in the good old way, which Noah invented, of running four hour charges, putting in the coal and allowing it to be nearly impoverished of gas, and bringing the gas down to a standard of nearly 17½-candle power, this matter of three hour charges was something which would bear the closest investigation and examination. I hope that all the members who have made any experiments with three hour charges will give us the benefit of their experience, so that we may see whether the results tally with those of our friend from Newport.

The President—Has any other member had any experience in three hour charges? I must take issue with my friend Lamson as to the difficulties attending the running of the three hour charges. I am not aware that we have had any more trouble in running three hour charges than we have had in running four hour charges.

Mr. Stiness—How long have you been running three hour charges?

The President—We have run three hour charges ever since we commenced running the Dieterich furnace, with the exception of a few days when we first started, when we tried four hour charges. We started, I think, a year ago last November, and our entire works are run with the Dieterich furnace under three hour charges.

Mr. Stiness—Is there any deteriortion in the heat?

The President—None at all.

Mr. Tarbell—Did I understand you to say that you also run three hour charges and the common furnace?

The President—We are not using any common furnaces. They are all Dieterich furnaces.

Mr. Allyn—Did you ever run three hour charges with the Davidson furnace?

The President—No. They are all Davidson settings; but with the Davidson furnace and old settings we did not run three hour charges.

Mr. Cabot—You made no experiments with them in three hour charges?

The President—No.

Mr. Cabot—So that all of your experience in the use of three hour charges has been in connection with the new furnaces?

The President—Entirely.

Mr. Lamson—I said that I believed that all who had tried three hour charges had invariably gone back to four hour charges. I will withdraw that assertion. The President is the one exception to the general rule.

Mr. Gerould—I was glad to hear our friend make his statement here today, as I may now hope to be vindicated in some of the statements which I have made here heretofore. I once had the honor of running the Newton and Watertown Works, and as you report a yield of 5.50 I think that I am all right. I will state that some three years ago I made an experiment in running three hour charges. I found that the best I could do it would reduce my yield half a foot per pound; so I discontinued it.

The President—I think that is quite the natural result to follow from the running of three hour charges with the ordinary furnace. It is one of the peculiarities of the Dieterich furnace, that we are able to maintain a uniform heat all the time. We do not have to let down the fires and clinker, but are able to keep up a uniform heat on the benches. I have never seen more uniform heats maintained all the time than those we are able to keep with the settings we are now using.

Mr. Cabot—What I want to learn particularly is, whether three hour charges, with the ordinary settings of retorts which most of us are using, prove an advantage over the four hour charges.

The President—I should say that it would be practically impossible to get such results with the common settings. Will Mr. Stedman give us the benefit of his experience with his new bench?

Mr. Stedman—I think the President has made a suggestion which is not exactly germane to the subject. This is, as I understand it, an arguement in favor of, or against three hour charges. That is something in which we have had no experience in our settings. As we have not tried three hour charges I cannot tell you what the result would be. By and by, when you come to the subject of regenerator furnaces I will have something to say. I have noted down a few observations as to our use of the regenerator furnace, and shall be glad to give them to the Association. What I have to say will come in better when we reach the discussion on regeneration; and if you will excuse me I will defer my remarks until that time.

Mr. Cabot—I would like to ask a question as to the coke which was used by Mr. Learned—whether he found any difference in the results according to the amount of coke used in the three and four hour charges.

Mr. Learned—Ours were four hour charges only.

Mr. Cabot—Whether the coke is equally valuable when used in three hour charges?

The President—We have not given much attention to that subject, but I do not know that there is any particular difference.

Mr. Cabot—I do not know that there should be any difference if the gas is all taken out of the coal.

The President—If there are no further questions to be asked Mr. Learned, we will proceed to the reading of the next paper, by Mr. F. C. Sherman, on "Steam Heating *v.* Gas Heating."

[To be continued.]

Majority and Minority Views of the Committee to Whom was Referred the Application of the United States Gas and Fuel Company for Lighting the City of Washington, D. C.

The readers of the JOURNAL are all doubtless aware that a short while since the United States Gas and Fuel Company made an application to Congress for the procurement of a franchise, which would allow it the right to manufacture gas and lay mains in the City of Washington, D. C. Such matters are regulated in the District of Columbia by Congress; and this application took the usual course prescribed by the laws governing this and similar cases. The committee to whom the application was referred were divided in sentiment, and could not agree as to the advisability of granting the franchise sought for. The result was the presentation to the House of Representatives of two reports, the one (representing a majority of the committee) in favor; the other (from the minority) against. We present below both documents; and it will be seen that the majority report is chiefly noticeable from the fact of its possessing so much of the "soul of wit"—its remarkable brevity. It would appear to most people, outside of a Congressional Committee, that the reasons (?) given for the granting of such an important franchise are hardly adequate, and fail to show in any manner the necessity supposed to exist for the establishment of another gas company in the city of Washington. The disparity is all the greater when it is remembered that Congress has the power to regulate both the quality and price of gas to consumers, in the District of Columbia, as at present supplied by the companies which are now in operation there.

VIEWS OF THE MAJORITY.

Mr. Barr, from the Committee on the District of Columbia, submitted the following report:

The Committee on the District of Columbia, to whom was referred bill H. R. 7487, having had the same under consideration, ask leave to make the following report:

In response to what seems to be a well-nigh universal demand for a competing gas-works in the city of Washington, the committee have prepared this bill, incorporating a number of gentlemen of wealth and public spirit to erect and operate a competing manufactory of gas for illuminating and heating, and have guarded the right and privilege granted as carefully as they could.

It is believed that a *bona fide* corporation for this purpose will be a great benefit to the citizens of the District of Columbia, by securing a better article of gas by both the company recommended to be incorporated and the existing company, and a greater amount of accommodation to the consumers of this commodity. For these reasons the committee recommended the passage of the bill.

Mr Heilman, from the Committee for the District of Columbia, submitted the following as the

VIEWS OF THE MINORITY.

The Committee for the District of Columbia, to whom was referred the bill (H. R 7487) to incorporate the United States Gas and Fuel Company, and for other purposes, submitted the following minority report:

We hold that it is bad policy to permit more than one gas company in the same part of any city. Experience has demonstrated that opposition gas companies are not beneficial; but that they are injurious to the interests of the citizens, and instead of promoting cheap gas they prevent and retard it by greatly increasing the capital necessary to carry on the business.

The Washington Gas Light Company have to-day capital and plant sufficient to supply twice the quantity of gas required by the city of Washington, and to permit a competing company to enter in the business would be simply to increase the capital without increasing the business. Why should this be done when there is no good reason or public necessity for it, and when it amounts to a moral certainty that both companies will combine? When there are only two parties to combine they will not long carry on a profitless business, or, in the language of Mr. George Stephenson, "When combination is possible, competition is impossible;" and it is a well-know fact that *every* opposition gas company started in this country, after a short term of competition, have either sold out, bought out, combined, or pooled earnings with the old company. While the brief competition lasted of course cheap gas prevailed; but when the inevitable combination takes place the people are made to pay the expenses of the war, and on a greatly increased capital. It seems that no law has yet been enacted that can prevent such combination, as in the case of Detroit, Mich. There the most stringent charter was granted, with security that the new company should not combine with the old one, but they did it. It seems there is no law that can prevent the individual stockholder buying the stock of the other company.

Competing companies have been begun in the following cities, and soon combined or were absorbed, to wit: New Orleans; Charleston, S. C.; Memphis, Tenn.; St. Louis, Mo.; Chicago, Ill.; Buffalo, N. Y.; Detroit, Mich.; Albany, N. Y.; New York City; Providence, R. I.; Brooklyn; Jersey City, N. J.; Newburg, N. Y.; Trenton, N. J.; Harrisburg.; Lancaster, Pa.; Baltimore, Md.; and several others. In all of these cities gas is sold at a higher rate than in Washington City. Upon these and other good grounds the authorities of Boston and Cincinnati have recently refused to permit competing companies, and the citizens of those cities are enjoying cheaper gas than in the cities where competition was allowed.

In truth all opposition gas companies are begun for purposes of stock-jobbing or speculation or to dispose of patent rights; and when all overtures are refused, as in the case of this city, Congress is asked to grant a charter to thereby force the old company to do what they would not do willingly.

A New York newspaper, in speaking of this proposed new gas company for the city of Washington, says:

'The new gas company has had one or two newspapers to give sinister winks when it was broached, and it is hinted that it is an 'airy nothing,' that would start out with a gilt-edged franchise and a big complement of high-priced officials whose object would be to sell out to the existing gas company, and that the projectors would realize something handsome out of the cadaver. The concern has a fine flavor of the ring about it, and starts life under a grim suspicion of being a job of the jobbers."

We assert that when one gas company is able and willing to supply all demands at a fair price it is not wisdom to permit an unnecessary increase of capital by allowing another party to enter the field, thereby rendering both capitals unprofitable by ruinous competition, while the competition lasts, and to be made up afterwards by exactions on the people.

We claim that it is not good legislation to make unprofitable a legitimate business which is dealing fairly with the people; and our investigations show that the Washington Gas Light Company have so dealt by supplying gas of a higher illuminating quality than is required by law, and sells it cheaper than any city on the Atlantic Coast; for instance, 28 per cent. cheaper than New York City, where they have had opposition gas companies. Gas is now sold in Wasnington at $1.75 per 1,000 feet.

We admit that if any existing monopoly be uncontrolled, either by competition or legislation, there would be grave danger that injustice might be done the public by charging exorbitant prices for an article of prime necessity; but happily, in this case, no such fear need exist, for by existing laws the Washington Gas Light Company is as absolutely under control of Congress, as far as the prices are concerned, as is the water-works of this city. If there is a city in the country where competition is not needed it is here, where Congress fixes the price and quality; and if the price is not low enough, Congress has only to say how low it shall be. Congress has exercised this authority several times, namely, June 30, 1861; July 11, 1862; January 30, 1865; April 10, 1869; June 23, 1874. These reductions were general, to the government and people alike. Since 1874 the company have made several reductions, voluntarily; and instead of useless warfare and loss, why does not Congress exercise this authority again, and compel the existing company to sell its gas as low as it is offered by the proposed opposition, and prevent the tearing up and defacement of your streets?

Gas companies by their nature cannot seek business one foot beyond their pipes, and it appears too plain to admit of argument that when Congress has established an agreement with a corporation to grant it certain privileges and immunities, and have thereby induced the corporation to invest its means for a specific purpose, and that too in such a shape that the corporation cannot resume its capital again for some other purpose, even though these immunities be infringed and these privileges contracted, that Congress is bound by every principle of justice and equity to not only refrain from impairing its own act, but to prevent any action of another from impairing in any degree these original rights or grants which constituted the strongest inducement for the corporation to invest its capital, especially in this case where Congress has the right to fix a fair price.

In England competing gas companies are forbidden by law, and existing companies are allowed to make 10 per cent. on their investment; hence the cities of the British Islands have the cheapest gas in the world. The prime cause of this cheap gas is that they have not excessive capital to earn dividends on. Opposition gas companies have not been capitalized on the old ones.

Two sets of gas pipes in the streets are a nuisance and lead to conflict of opinion as to which set of pipes are leaking; the leaks therefore go unchecked, endangering the health and comfort of the citizens, or both parties tear up the streets searching for the leaks. When there is but one company there is no doubt as to who is responsible, and but one excavation is necessary to find one leak.

The laying gas mains under sidewalks should be positively prohibited, for gas goes in the direction of the least resistance, and if pipes are laid under the sidewalks, when leaks take place the gas soon finds its way into cellars and vaults, thereby endangering the health and sometimes the lives of the inhabitants by explosions. Besides, when gas mains are laid under sidewalks the sensible and insensible leaks of gas come in contact with the roots of the shade trees, and kill them, and no matter how carefully gas mains are laid the trees will suffer if they are too near them.

Before the asphalt and other roadways were laid down, the Washington Gas Company, in the most careful manner and at great expense, relaid and stopped any leaks in their pipes in the streets. The amount of leakage has thereby been reduced to the minimum. When the new sidewalks were recently laid on Pennsylvania avenue and other streets the company was required by the Commissioners to renew their service pipes for house supply to all persons using gas, and were further required to lay such service pipes to points and places where gas may be needed in the future. For what purpose was this precaution taken, and why this requirement by the District Commission? It was that the expensive and smooth streets and sidewalks shall not be torn up by doing such work again. If the new company be admitted at least 150 miles of main trenches will have to be dug in the streets, and if they get half the consumers and half the lamps, 9,000 or 10,000 lateral trenches will have to be dug, creating a nuisance for many years to come.

Streets and sidewalks such as are in Washington cannot be taken up and put down again to be or look the same as before. In proof of this it is only necessary to look at the defacement and ugly scars where the surface has been disturbed by excavations or caving in of sewers, and where the paving was put down again. No skill can, it is asserted, prevent more or less settling of the disturbed earth in trenches, and patching the surface is an unsightly and unsatisfactory substitute for the original uniform surface.

The late commissioner of streets in Philadelphia, in speaking of the cost of maintaining streets when the mains and gas and water connections are permitted to be laid after the streets are paved, said: "It is this system which is really the bane of street paving. During the present year 22,000 breaks were made in the streets to permit the performance of work which might as well have been done before the pavements were laid." And pointing to a street in view, he said: "That street has been repaired three times over the ditch dug by the underground telegraph company, and it is sinking again." "No labor or skill," said he, "can ever repair over a drain and preserve the level of the street. In my opinion it would be advisable to compel the property holders to make water and sewer connections before the streets are paved and to grant no authority to tear up the streets under any circumstances in which it could be prevented."

This is what the present gas company has done, and if another gas company be permitted to tear up the streets, it will not be because they have any benevolent intention towards the citizens of the District. They simply desire this grant for the purpose of making money, by issuing and selling bonds and stocks to the public far beyond the value of the work done. Contracting with their own construction company to do the work. They have an inside organization, called their construction company, to whom they pay enormous prices, and in this way excessive issue of bonds and stock can be covered up, and the public who hold such security are left to shift for themselves, as the projectors manage to get rid of all the stock and bonds they can. This is the course pursued by a large majority of all the opposition gas companies started in this country. And when the holders of such stock and bonds find out the real condition of affairs they readily listen to overtures from the old company, or seek combination with them.

To avoid these evils, we earnestly ask that Congress will carefully look into the averments here made and refuse to grant a charter to any more gas compapies in this District until they become satisfied that there is some public necessity for such.

The bill asking for a charter for the United States Light and Fuel Company for the District of Columbia is defective in many particulars. It

places no restrictions on the company in the issue of bonds, and provides no safeguards against injury to the pipes and property of the existing company, as it should. The company, under this bill, may run under or over the present gas and water pipes in an unscientific and careless way, and, as in cases heretofore when no remedy was provided for in the chartering of the new company, lead to continual injury to one or the other, to conflict and litigation; and we ask, before this bill be considered, that these defects be remedied.

The Washington Gas Light Company has no watered stock and no bonds. Its stockholders are scattered from Alabama to Maine, but nearly one-half of the stock is now held in the city of Washington, and stock in this company is held by 160 widows' and orphans' estates, nearly all of whom reside in this District, to many of whom the loss of even one year's dividend would mean the deprivation of comforts, and to some the necessaries of life.

Congress ought to look well into this matter before disturbing a concern in which so many people of this District are interested, and especially so when Congress has the laws already enacted, and has exercised the right, to fix the price and quality of the gas sold in the District of Columbia.

The Macon (Ga.) Gas Light and Water Company's New Works.

By A. E. Boardman.

THE WATER WORKS.

The Macon Gas Light and Water Company, of Macon, Ga., has just completed extensive improvements in both departments of its business, which show the rapid growth of the city in the past few years, and will give an impetus to its future progress. The company began the construction of water works in the winter of 1881-82, and was able to supply a good many consumers during the following summer, though the system was not completed until the fall of 1882. The water is furnished by a number of springs about two miles from the center of the city, and is of remarkable purity and softness—the chemical tests showing 1½ grains of solids to the gallon, and less than 2 degrees of hardness. A collecting well, with a capacity of about 50,000 gallons, receives the water from the springs. The pump and boiler house, with fuel shed attached, stands between this well and the railroad, and is about 50 feet from each, so that it is convenient for the transportation of fuel.

The pump used is a Worthington duplex-compound, with 15-inch stroke and steam cylinders 12 and 20 inches, and plungers 10 inches in diameter. It is capable of pumping one million gallons per day at moderate speed. The motive power is supplied by two horizontal tubular boilers, each 18 feet long and 4 feet diameter. One of these is used while the other is kept in readiness. The pumping main is of cast iron 8 inches in diameter, and follows the right of way of the railroad to the boundary street of the city; thence up that street to the reservoir, a distance of 1½ miles from the springs. The reservoir is an excavated basin, rectangular, with rounded corners, in plan. The dimensions at top are 120 by 220 ft., with slopes 45 degrees, and a depth of 28 ft. About two million gallons are kept in it all the time. It was excavated from very hard clay, and the bottom and sides well puddled and covered with a lining of hydraulic concrete, from 6 to 12 inches thick. The distributing mains are from 12 down to 4 inches in diameter, and so arranged as to have no dead ends. They were furnished principally by R. D. Wood & Co., of Philadelphia, and are a little over 11 miles in length. There are 34 valves, enabling any part of the mains to be cut off without interfering with the supply throughout the remaining sections. The city rents 53 fire hydrants, and, in addition, a manufacturing company rents three; the Gas and Water Company has two for the protection of its property, one at the water station and one at the gas works.

The average pressure throughout the business portions of the city is 50 lbs. Though in operation for only a year and a half, there are 306 taps in use, without counting the city offices and engine houses. This number embraces four hotels, the shops and offices of the seven lines of railway centering here, four hydraulic elevators, five livery stables, and many factories. The works of the Company, with its two hydraulic elevators, are not included. Nearly half the consumers are metered, and the daily consumption of water is about 280,000 gallons.

The Company expects, in the near future, to extend its water works by the erection of a standpipe and laying of mains to supply the hill portion of the city, which, being upon the same level as the reservoir, is too high to be served from the present system. When that is accomplished Macon will be blessed with an abundance of the purest water to be found in the South.

THE GAS WORKS.

During each succeeding winter for the past few years it became more and more apparent to all concerned that the capacity of Macon for consuming gas must be diminished, or the capacity of the works for making the gas increased. As the latter is the more desirable and natural course, the Directors in solemn conclave decreed that something must be done. The engineer, as is usual in such cases, was set to work to discover the *something* to be done and the *how* to do it. It was decided that entirely new and larger workers were necessary, as both the carbonizing and purifying plant and the holder room were too small, and the old works could not be interrupted until new ones were in readiness. By a happy combination of circumstances, and some good management on the part of the Directors, the funds were provided and the land purchased. About September 1, 1881, the ground was broken for the new holder tank; and by the middle of the following March the holder was complete and in operation, being connected with the old works. The foundations for the new buildings were excavated in May, and on the 23d of November following gas was made for the first time in the new works.

The lot on which the works are built is 18 feet below the grade of the Central Railroad track, from which a siding is carried into the lot on trestles, and over the top of the coal shed. This is a brick building, with a wooden roof, having doors opening through the roof, so that the coal is dropped directly into it from the cars. It is 140 ft. long by 34 ft. wide, and will conveniently store 1,500 tons of coal. The main building is 112 ft. long by 40 ft. wide, and is divided by brick partitions into three compartments. The first, or retort house, is 38 by 50 ft., inside measurement; the next, or engine room, is 14 by 38 ft., and contains the engine, exhauster, condenser, and scrubber; the third, or purifying room, is 38 by 44 ft. There is a small extension, 12 by 20 ft., on the end of the main building, containing the meter, governor, and vales for changing the holders. The floor, to the lower story or basement, is 6 inches above the general level of the lot; and this basement is 10½ ft. high. The upper story is 28 ft. to the eaves of the roof, and the ridge is 11 ft 9 in. higher still. A lantern goes the entire length of the ridge, except about 8 ft. on each end, and the gables have large windows to assist ventilation. The basement walls are pierced by a series of segment head arches, entirely open, as it is not necessary to close them in this climate. In the story above, directly over these arches, are the large circular head-windows, filled with slats. Along one side of the retort room extends a shed 10 ft. wide. On the upper floor of this is kept the night and Sunday supply of coal, while the lower portion contains the coke remaining unsold. Wagons are driven alongside and easily loaded. One end of the shed protects the boiler, its front being in one of the lower arches. At the end of the retort room, and opposite a door in the coal house, is one of Lane & Bodley's direct-acting hydraulic elevators, for raising the coal to the retort floor. Here are two benches of sixes, worked from the upper floor, the coke falling through to the lower one. These benches are heated by McIlhenny regenerator furnaces, and supplied with his patent self-sealing lids and hydraulic main. These you are doubtless familiar with, so I will not describe them. There is space in the room for two more of these benches when occasion requires.

The gas is taken through a 10-inch pipe across one end of the room, then along one side, and, in a zigzag course, down the other end—a distance in all of about 160 feet. The drip is in the direction of the flow, and the gas is cooled very slowly. Then it goes into the next room, and through the Root exhauster, which is run by a horizontal 5-horse power engine. The speed is controlled by one of Helme's patent governors and valves, which regulates the pressure in the hydraulic main to a nicety. From the exhauster the gas traverses a condenser, composed of four rows of 6-inch pipes, with return bends at top and tar box at bottom, on the old plan. Thence it is conducted into the scrubber, which is cylindrical in form, 4 ft. in diameter and 20 ft. high, filled with wooden slats. All these are, of course, furnished with by-passes, and all the bends with hand-holes. The purifiers are 10 ft. square and 3 ft. deep, with 6 feet between. The covers are lifted by means of a differential pulley suspended from a rolling carriage on a transverse beam overhead. A dry center seal is used, and every pipe throughout the works is entirely visible and convenient of access at all times.

The drainage is thorough—an 18-inch sewer running beneath the building, and all the drips are self-acting, those in the holder inlets and outlets being the only ones that have to be pumped. The purifying room is lighted by gas jets placed in openings through the walls, with glass sash on each side, and flues to carry off the products of combustion.

The purifying material is raised by a small hydraulic elevator in the room. Iron sponge is used in the new purifiers, and, after passing them, the gas will be carried through the old purifiers, two at a time, filled with lime to take out the carbonic acid, which the sponge does not entirely remove. The station meter was built by Messrs. Helme & McIlhenny, and is furnished with a by-pass, which is located in the lower part of the meter room, along with the governor and its bye-pass and the valves for controlling the holders and mains to the city. A man can go from the retort room to these valves without being exposed to the weather. The building is entirely fireproof, being of brick, iron, and slate, and is quite ornamental in appearance. Between the arches are paneled pilasters, and the key bricks, belting courses, and cornices are of black bricks. The windows and doors are painted a dark olive-green, as is the piping and machinery, the latter touched up with red.

The new holder is 60½ ft. in diameter and 20 ft. deep. It was built by Messrs. Morris, Tasker & Co., who also furnished most of the iron work in the machinery and building. The tank for the largest of the old holders is finished, into which it is proposed to move it, as the ground where the old works stand has been sold.

From the works the gas is carried through about 2,500 feet of 10-inch pipe to the distributing mains, near the center of the city. Then it branches into three 6-inch mains, running in different directions.

What results will be obtained remains to be seen. It is safe to say, however, that the new benches are far superior to the old, both in yield per retort and per pound of coal, and in comfort to the men, and saving of coke. The difficulties encountered, though new, are no greater than with the old, and when once mastered are not so liable to recur. As the men become better acquainted with the furnace the yield per retort increases, and in the last month has grown from less than 6,000 to nearly 8,000 feet per retort per diem; and the end is not yet. The Directors are so well satisfied that there will be a saving in the cost of manufacturing that they have decided to reduce the price to consumers from $3 to $2.50 per thousand after the 31st of March.

ITEMS OF INTEREST FROM VARIOUS LOCALITIES.

A Black Eye for Opposition in Cincinnati, Ohio.—It would appear that the experience gained by those who have already tried to foist an opposition company upon the people of Cincinnati, Ohio, does not operate to deter still other "high-minded" and "virtuous" speculators, deeply imbued with the anti-monopoly spirit, from making an effort to locate in that place. A certain Mr. Johnson, representing a company with a name which is becoming tolerably familiar to the gas men of this country, the Equitable, petitioned the Common Council to grant a charter and allow him and his associates to build works, lay mains, and distribute gas in the city of Cincinnati, Ohio. Mr. Johnson, in an interview with a reporter of the Cincinnati *Enquirer*, stated the following:

"The Equitable means business—under no circumstances will we sell out to the present company. It is backed by large capital—London, New York, and Baltimore capital—and several prominent citizens of this city are interested in it. These men are able to hold their own against any corporation that may seek to fight them. It is not an electric light nor a 'new process' company. It proposes to use the same processes as the present company does."

"What will you charge the consumers?"

"One dollar forty. The present company charges $1.75 net. We shall charge $1.40, or 35 cents less a 1,000 feet. There is more than one company in Baltimore and New York, and in Baltimore they sell gas at $1.

"All the coal Baltimore gets is brought by rail from the mines. Our coal has the benefit of water transportation, and can be brought here cheaper. We are going to run this company for money, you understand. It is a pure commercial scheme, organized without reference to the Cincinnati Gas Company or any other competitor. We can get all the surety on our bond we want here in Cincinnati—some of the strongest capitalists we have."

Mr. Johnson says some things which are true, and he also says some things which are untrue. The only matter for wonder about this is concerned in the first fact. Baltimore has more than one company, and we are of the opinion that some of the gas shareholders in that city know it too. It will hardly be news to the fraternity that New York City has more than one company, but Mr. Johnson didn't say anything about the price charged here. It would hardly fall in line with his argument; but why should he stop at New York and Baltimore. Surely, there are some other towns and cities in the country where more than one company exists, and if the true state of affairs were determined, perhaps these same cities and towns will be found to have been better served with light, both as to quality and price, when only one company existed in each of them. Mr. Johnson says, "the present company charges $1.75 net;" the Cincinnati company charges $1.60—but a little discrepancy like that don't count.

We can safely say that in no other city in this country will be found less dissatisfaction among consumers of gas than in Cincinnati, Ohio; and this state of affairs is to be traced directly to the method of management there pursued. The people of Cincinnati have never asked that a competing company be established there, and there exists no earthly reason why such opposition should be started. If calm consideration is given to the subject by those who propose to put capital into opposition works in Cincinnati, we fail to see where success can be hoped for in this direction—in fact, how any set of men, no matter what amount of money may be behind them, could expect to make such opposition pay. We mean opposition pure and honest, not simply the operations of blackmailers. With gas, both as to quality and price, satisfactory to the people and the press; that, in addition to the already extensive plant in operation at the present time, a new works, of a manufacturing capacity of three millions, is now being built, and which will be equipped with every valuable appliance known to modern gas works construction; and remembering that at the head of the company, directing and controlling its every action, stands a man who is thoroughly posted in every detail of gas manufacture, a man of rare executive ability and sterling integrity, and one who, when speaking of persons and things, never makes any mistake as to the terms he uses, we fail to see, as said before, why opposition of all kinds should not steer clear of Cincinnati, Ohio.

But to return to the subject in hand. Before an opposition company can succeed in establishing itself in Cincinnati, quite a complex system of legislation must be set in motion. Any proposition looking to the creation of a new company *must* originate with, and receive the approval of, *four* members of the Board of Public Works. This board consists of five members, who are elected by the voters of the city. When the necessary consent of the four members of the Board of Public Works is obtained, the application passes to the Board of Council, this Board numbering 50 members. The application next goes to the Board of Aldermen, consisting of 25 members; then the matter goes before the Mayor. Should the approval of this official be obtained, the question then goes back to the original starting point—the Board of Public Works. Should the final action of this body be favorable, the application then goes before the voters of the city, where the question is either killed or granted. On March 7 the Common Council of the city met to consider the matter of the application of Mr. Johnson and his brother "strikers," with the following result—a vote being taken, and such a vote—29 against, 1 in favor. If the Equitable people had let Gen. Hickenlooper count the ballots himself he would have done better for them than this. The weather has been very cold "out West" lately.

A New Superintendent of Lamps for Boston, Mass.—At a meeting of the Board of Aldermen of the city of Boston, Mass., Hugh J. Toland was nominated by the Mayor and unanimously confirmed as Superintendent of Lamps for one year. Mr. Toland takes the position which has been very acceptably filled by Mr. George H. Allen. The reasons which prompted the change are presumed to have been purely political. It is to be hoped that Mr. Toland will prove to be a competent official.

Petroleum Operations for February.—The petroleum report for the month of February shows that during the month there were completed, in all the fields, 126 wells, with an aggregate production of 1,866 barrels—a falling off of 1,000 barrels as compared with January. Twenty-one "dry holes" were sunk during February. The number of wells drilling is 149, and the number of "rigs" up 141—a slight increase over January.

An Explosion of Gas at Eastport, Maine.—They have an original, not to say primitive, manner of searching for gas leaks "up in Maine," as witness the following: On March 1st several wise men connected with the Easport gas company discovered a leak in the main pipe in Washington street near the Custom House. The ground was frozen hard, and after the wise men had put their heads together they built a large fire on the ground to thaw it, so that they might be able to dig and find the leak. They succeeded quicker than they anticipated, for in a very few seconds there was an explosion, and twenty feet of the street, for its entire width, went 200 feet into the air, and one fragment knocked the ball off a flagstaff. Near where the fire was built was a large gas reservoir with a wood cover. This cover was blown skyward 60 feet, passing over several buildings, and descended through the roof of a shed attached to Grady's sardine factory, more than 100 feet away. Two boys and a man were elevated several feet, but escaped with severe bruises. Windows were broken on all sides, and the Custom House steps and sidewalk were destroyed.

A Liberal Offer.—The sum of £500 has been offered as a premium by Mr. Ellis Lever of England, to anyone, either in or out of the United Kingdom, who shall during the present year invent a portable electric or other lamp "which working miners can conveniently carry from place to place in the mine, and which will not, under any circumstances whatever, cause an explosion of gas." Further particulars can be obtained by addressing Mr. Thos. Burt, M.P., President of the Miners' National Union, Newcastle-on-Tyne.

Hari-Kari to be Superseded.—They have discovered a method of thinning out the over-abundant population of Japan. Kerosene lamps have been introduced into that country. They will certainly prove efficacious for the purpose.

The Putnam House Adds Another to the List.—William S. Lawrence, a salesman in the employ of Hollister, Crane & Co., flour merchants at No. 90 Broad street, was suffocated by illuminating gas in the Putnam House in Fourth avenue, on the evening of March 1. The door of his room was broken open at 8:30 A. M. Mr. Lawrence was then alive, but he died

within an hour. It was thought by the police that he had committed suicide, because the door of his room was found locked and a chair braced against the knob, while the gas was allowed to escape from an open burner. His friends said, however, that he was in good health and spirits and had no cause for suicide. The fastening of his door was believed to have been only a precaution against thieves. Mr. Lawrence liked to have a light burning in his room at night, and it is believed that the flow of gas was interrupted causing the flame to go out.

And Still They Use It.—The explosion of a kerosene oil lamp in the cigar store of Lorenzo Jimenz, on the first floor of the two-story building at No. 1,336 Broadway, N. Y. City, caused a fire which destroyed cigars valued at $3,000. The building was damaged $300.

Coal Awards, Philadelphia (Pa.) Gas Trust.—The Committee on Works of the Philadelphia Gas Trust opened proposals for any part of 300,000 tons of gas coal, at 12 M. on Thursday, March 1. The proposals called for the furnishing of 300,000 tons of coal, to be delivered as per the terms of the contract. After some discussion as to the superiority or inferiority of the grades of coal offered, the committee decided to make the following awards:

Tons.		Price.
*50,000	Chesapeake and Ohio Coal Agency	4.40
40,000	The Despard Coal Company	4.37
20,000	James Boice	4.38
50,000	Saltsburg Coal Company	4.59
5,000	" " "	5.34
50,000	" " "	4.61
85,000	Penn Gas Coal Company	4.65

* This lot had been previously awarded.

Richmond (Va.) Gas Matters.—At a meeting of the Common Council of Richmond, Va., held Monday, March 5, Mr. Higgins, from the Committee on Gas, submitted a report requesting the Committee on Finance to report an ordinance relieving comsumers of the cost of gas used in the various public buildings and street lamps of the city, and also placing $25,000, or so much thereof as may be necessary, to the credit of the Committee on Light, to be used in the remodeling of the works, the said $25,000 to be raised by the issue of bonds, or in such other manner as might be deemed best. An ordinance reducing the price of gas, after October first, to $1.50 per 1,000, accompanied the report.

The report was taken up *seriatim*, and that portion relating to the relieving of consumers of gas, etc., was adopted. Then the section looking to the remodeling of the works was taken up. Messrs. Higgins, Ellyson and Clarke spoke in favor of the policy outlined by the committee, and the opposition was voiced by Mr. Curtis. When the final vote was taken, it was agreed, by a vote of 23 for to 6 against, to grant the appropriation asked for.

The question of the ordinance reducing the price of gas from October 1 was then considered. Mr. Curtis moved to amend by substituting May 1 for October 1.

Mr. Pizzini said he was perhaps the largest gas-payer in the Council, but he considered the interest of the city paramount to his own, and he moved the reference of the ordinance to the Finance Committee. He was unwilling to deprive the city of the revenue accruing from the present rate. As soon as the cost of manufacture was reduced he would favor a reduction of gas prices.

Mr. Frischkorn said he could not favor reduction because such a fact had not been provided for in the preparation of the annual bill of appropriations.

Mr. Bowie said reduced figures would increase the number of consumers.

A motion to refer to the Finance Committee was lost.

Recurring upon Mr. Curtis's amendment, this was lost.

The rules were suspended, and the ordinance in its original shape was adopted.

Correspondence

[The Journal is not responsible for the opinions expressed by correspondents.]

Defects in Management of Small Works.

Phillipsburg, N. J., March 7, 1883.

To the Editor American Gas Light Journal:

The questions are often asked, why some of the small gas works do not pay, and, how it is best to manage them. In the same category might also be included some of the larger ones. Perhaps a statement from this company might be of some interest.

We commenced operations here in 1878, and now have 170 consumers, and 49 street lamps. The price of gas to the town and railroad companies is $2.00 net; to private consumers $2.25 net. The average price received per 1,000 feet sold was $2.15 during the last year. We are 400 miles distant from the coal mines. We made last year 3,500,000 cubic feet. We have invested, per 1,000 cubic feet manufactured, $7.00; we paid last year an 8 per cent. dividend, with a small surplus left.

Now, judging from reports received from other works of the same size, where coal is the same price, some are found to be getting $3.00 for gas and paying but an 8 per cent. dividend, showing the cost to those companies to be 70 cents per 1,000 greater than ours. The question might be asked, "Why so much difference?" One reason, I think, is that small companies employ men as superintendents who have had but little experience—or, cheap men. This, I think, is a mistake. They should be those who are thoroughly posted in the business from the retort house to the consumer's burner. Such men would save twice their salary, and would succeed in any works. One great mistake some small companies make is in trying to use clay retorts without an exhauster, with probably 3 or 4 inches seal in hydraulic main. To companies so situated, I would say, put gauges on the stand-pipes, and it will be found that a pressure vibrating from 6 to 12 inches exists. The steam-jet exhauster, with all necessary appliances, can be had for a small sum, and is within the reach of every company. With the pressure above mentioned the retorts will fill with carbon about every six weeks, and, in one year, are used up.

I know of a works, with an annual make of 18,000,000, and a sale of about 13,500,000—here is a street loss of about 25 per cent. Their yield is but 4.25 feet per pound, using best Penn coal, with 5 per cent. cannel. There is evidently something radically wrong there. Yours truly, S. T.

Poughkeepsie Street Lamps.

Poughkeepsie, N. Y., March 7, 1883.

To the Editor American Gas Light Journal:

The Journal of the 2d inst. contained the full report of the Street Lamp Committee to the Common Council of this city, severely criticising the action of the Citizens Gas Company. But you merely referred to the reply that I made to that report, saying, "As is natural to suppose, Mr. Allen objected to the *tenor* of the report of the Committee, etc." I did more than that—I gave a statement of facts showing that the report was untrue in every essential statement, and challenged proof of failure by the Citizens Gas Company in any single instance to perform its every agreement with the city. Alderman Cunley was a new member of the Common Council, and but recently appointed Chairman of the Lamp Committee. He frankly admitted that personally he knew nothing as to the truth of the charges made, and expressed his regret and chagrin at having made the report, and said that in justice to the Citizens Gas Company, he would have my reply read before the Common Council at its next meeting, Feb. 19, and it was so read. If it had been published in the Journal with that report, the object of those who caused the report to be made and published, would have been defeated, and I would have had nothing further to say. It is very evident that the report produced no impression, in the Common Council, unfavorable to the Citizens Gas Company, as no investigation in relation to the charges made was even suggested. But more than this, the Common Council at its last meeting on the 5th inst., ordered our bill for quarter ending March 1 to be paid. It was the largest bill that we had ever presented, and according to published reports of the action of the Common Council, (a copy of which I sent you) there was not a dissenting voice to its payment. Our consumption has gradually increased; and during the past winter has averaged about 10,000 feet per day more than ever before. Less complaints and more prompt payments of our gas bills have been made during the last six days than at any time heretofore. Such reports have not injured us *at home*.

Now as to what I said in relation to the price of gas in Hartford—I did not intend anything unfair to Mr. Harbison and his associates in the Hartford company. Efforts have been made here to produce dissatisfaction because the city pays $34 per lamp, while private consumers are paying only $1.75 per 1,000. We took the position five years ago, that reduction in price should be in favor of private consumers, rather than the street lamps.

1st. Because the street lamps are mostly for the protection of property, and are therefore paid for by the taxation of property of non-residents as well as of residents.

2d. That many private consumers, to whom gas is a necessity, earn their daily bread by mental and manual labor, and that to such, cheap gas is a great boon.

I referred to Hartford and other cities to show that $34 per lamp was not an unreasonable price even when private consumers were paying $2.25; and much more reasonable was that price, when the price to private consumers was reduced to $1.75. I beg leave to say that did *not* know that the price of gas had been reduced in Hartford to $1.90. I am glad to hear that Mr. Harbison has taken that course instead of reducing the price to the city; and I do not believe that it forms any good reason for his reducing the price to the city because he reduced it to private consumers. Respectfully yours,

A. L. Allen.

THE AMERICAN
GAS LIGHT JOURNAL

A. M. CALLENDER & CO.,
PROPRIETORS.

Editor—G. WARREN DRESSER.
Manager—C. E. SANDERSON.

PUBLISHED ON THE 2ND AND 16TH OF EACH MONTH
At No. 42 Pine Street, New York.

This is a recognized official organ of—
LIGHT, HEAT, STEAM, WATER-SUPPLY,
VENTILATION, SANITARY IMPROVEMENT,
AND GENERAL SCIENCE.

TERMS

SUBSCRIPTION—Three Dollars per annum, in advance.

AGENTS

NEW YORK—AMERICAN NEWS CO. 39 and 41 Chambers St
BOSTON—S. M. PETTENGILL & Co., 6 State Street.
PHILADELPHIA—PRATT & Co., Corner 9th and Arch Streets.
England—C. W. HASTINGS, 22 Buckingham St., London, W. C.
Germany—B. WESTERMANN & Co., of New York

FRIDAY, MARCH 16, 1883.

New Shops and Foundry of the Oregon Iron Works.

James R. Floyd, proprietor of the Oregon Iron Works, informs us that his old quarters, at 738 to 744 Greenwich street, New York city, have been found to be inadequate to the demands of his business. He is now completing the erection and equipment of a new foundry, works, and shops, on Twentieth street, between Tenth and Eleventh avenues. The new institution has a front on Twentieth street of 175 feet, and an average depth of 90 feet. He expects to have everything in working order by the first of May next. The Oregon Iron Works have been operated by Mr. Floyd (formerly Herring & Floyd) for over a quarter of a century.

Magnitude of the Gas Interest.

Artificial lighting is one of the largest manufacturing interests in the world. In a round sum, there is about $375,000,000 invested in the manufacture of gas in the United States, New York city alone having in the neighborhood of $22,000,000 invested, and Brooklyn city about $12,500,000. Paris, France, has $30,000,000, and London, Eng., about $40,000,000. This is a great showing for an industry which may be said to date from the time that Murdoch illuminated Boulton's manufactory at Soho in 1802.

Gas Matters at Brockville, Canada.

The annual meeting of the Brockville Gas Company was held at the Company's offices on St. Paul street Monday, March 5, when it was decided to reduce the price of gas from $3 to $2.50 per thousand feet. At present there are about 210 consumers in the town, the annual output not exceeding 3,000,000 feet. As is generally well known, the price of gas is regulated by the quantity of gas consumed, producers being able to quote low figures where the consumption is large. In Ogdensburg, where the consumption is about 8,000,000 feet, the average price is fixed at $3 net. Ottawa consumes 30,000,000, and Kingston 20,000,000 feet, and in each of these cities $3 is the ruling price. It will at once be seen, therefore, that though the output is smaller by several million feet than all these other places, the price at Brockville will be considerably less. The $2.50 rate goes into effect on April 1st and applies only in case of prompt payment. Mr. Thomas Wilkinson, who has so ably managed the manufacturing and sales departments of the Brockville Company for the past twenty-five years, is continued in his position.

PRICE OF GAS REDUCED IN NASHUA, N. H.—Nashau, (N. H.) Gas Company announces a reduction in price of gas to $2.00 per thousand, to take effect April 1. Good for Mayor Norton.

Gas Stocks.

Quotations by Geo. W. Close, Broker and Dealer in Gas Stocks.
(with W. B. Scott & Co.,)
34 PINE STREET, NEW YORK CITY

MARCH 16, 1883.

☞ All communications will receive particular attention
☞ The following quotations are based on the par value of $100 per share.

	Capital.	Par.	Bid.	Asked
Gas Co.'s of N. Y. City.				
Central	$466,000	50	80	90
Harlem	1,800,000	50	97	99
" Bonds	170,000		—	—
Manhattan	4,000,000	50	233	237
Metropolitan	2,500,000	100	188	192
" Bonds	658,000		106	108
Mutual	3,500,000	100	115	120
" Bonds	1,500,000		100	102
Municipal	1,550,000	100	188	190
" Bonds	750,000		109	110
New York	4,000,000	100	124	126
Northern	125,000	50	—	95
" Scrip	108,000			
Gas Co's of Brooklyn.				
Brooklyn	2,000,000	25	112	115
Citizens	1,200,000	20	72	75
" S. F. Bonds	320,000	1000	105	107
Fulton Municipal	3,600,000	100	70	80
Peoples	1,000,000	10	48	—
" Bonds	290,000		104	107
" "	250,000		88	90
Metropolitan	1,000,000	100	78	85
Nassau	1,000,000	25	59	—
" Ctfs.	700,000	1000	90	93
Williamsburgh	1,000,000	50	60	65
" Bonds	1,000,000		100	101
Richmond Co., S. I.	300,000	50	70	75
" Bonds	40,000	—	—	—
Out of Town Gas Companies.				
Buffalo Mutual, N. Y	750,000	100	72	75
" Bonds	200,000	1000	95	100
Citizens, Newark	918,000	50	80	85
" " Bds.	124,000	—	105	10
Chicago Gas Co., Ills			150	155
Cincinnati G. & C. Co.			178	180
Consolidated, Balt.			41	42
Bonds			105	106
East Boston, Mass	220,000	25	122	128
Hartford, Conn	700,000	25	120	128
Jersey City	750,000	20	155	160
Laclede St Louis Mo.	1,200,000	100	114	117
Montreal, Canada	2,000,000	100	186	187
New Haven, Conn		25	144	—
Oakland, Cal			32	33
Peoples, Jersey City			75	80
" " Bds.			...	...
Rochester, N. Y		50	70	80
Washington, D. C	2,000,000	20	200	210
Wilmington, Del		50	174	...
Yonkers		50	30	32
St. Louis Missouri	600,000	50	250	254
San Francisco Gas Co., S. Fr'isco Cal.			55	57
Toledo, Ohio			95	97
Troy, Citizens	600,000	100	—	—

360 shares of Manhattan sold at auction at 234½, and 430 shares of New York at 125.

Advertisers Index.

Page

GAS ENGINEERS.
E. McMillin & Co., Ironton, Ohio ... 134
G. Warren Dresser New York City ... 141

GAS WORKS APPARATUS AND CONSTRUCTION.
James R. Floyd, New York City ... 139
T. F. Rowland, Greenpoint, L. I ... 139
Delly & Fowler, Phila., Pa ... 139
Kerr Murray Mfg. Co., Fort Wayne, Ind ... 139
Stacey Mfg. Co., Cincinnati, Ohio ... 139
Bartlett, Hayward & Co., Baltimore, Md ... 139
P. Munzinger, Phila., Pa ... 139
Morris, Tasker & Co., Limited, Phila., Pa ... 139
Davis & Farnum Mfg. Co., Waltham, Mass ... 110

GAS AND WATER PIPES.
A. H. McNeal, Burlington, N. J ... 138
Gloucester Iron Works, Phila., Pa ... 138
James Marshall & Co., Pittsburgh, Pa ... 138
R. D. Wood & Co., Phila., Pa ... 138
Warren Foundry and Machine Co., Phillipsburgh, N. J ... 138
Mellert Foundry and Machine Co., Reading, Pa ... 138

SCRUBBERS AND CONDENSERS.
G. Shepard Page, New York City ... 140
Jas. R. Smedberg, New York City ... 136

RETORTS AND FIRE BRICK.
J. H. Gautier & Co., Jersey City, N. J ... 136
B. Kreischer & Sons, New York City ... 136
Adam Weber, New York City ... 136
Laclede Fire Brick Works, St. Louis, Mo ... 136
Brooklyn Retort and Fire Brick Works, Brooklyn, N. Y ... 136
Borgner & O'Brien, Phila., Pa ... 136
Gardner Brothers, Pittsburgh, Pa ... 136
Henry Maurer, New York City ... 136
Evens & Howard, St. Louis, Mo ... 136
Chicago Retort and Fire Brick Works, Chicago, Ills ... 136
Taylor and Anderson, Cincinnati, Ohio ... 136

PHOTOMETERS.
G. Shepard Page, New York City ... 139

DIETERICH'S REGENERATOR FURNACE.
Charles F. Dieterich, Baltimore, Md ... 144

GAS STOVES.
American Meter Co., New York and Philadelphia ... 135

VALVES.
Ludlow Valve Manufacturing Co., Troy, N. Y ... 137

GAS METERS.
Harris, Griffin & Co., Phila., Pa ... 142
American Meter Co., New York and Philadelphia ... 143
The Goodwin Gas Stove and Meter Co., Phila. Pa ... 143
Helme & McIlhenny, Phila., Pa ... 143
Maryland Meter and Mfg. Co., Baltimore, Md ... 142
D. McDonald & Co., Albany, N. Y ... 143

EXHAUSTERS.
P. H. & F. M. Roots, Connersville, Ind ... 137
Smith & Sayre Manufacturing Co., New York City ... 137

GAS COALS.
Penn Gas Coal Co., Phila., Pa ... 141
Perkins & Co., New York City ... 140
Cannelton Coal Co., New York and Philadelphia ... 141
New York and Cleveland Gas Coal Co., Pittsburgh, Pa ... 141
Newburgh Orrel Coal Co., Baltimore, Md ... 141
Despard Coal Co., Baltimore, Md ... 141
Fort Pitt Gas Coal, Pittsburgh, Pa ... 141
Chesapeake and Ohio R.R Coal Agency, N. Y. City ... 141

GAS ENGINES.
Schleicher, Schumm & Co., Phila., Pa ... 144

STREET LAMPS.
J. G. Miner, Morrisania, New York City ... 113

PURIFIER SCREENS.
George D. Cabot, Lawrence, Mass ... 134

BURNERS.

G. Gefrorer, Phila., Pa. 138
The Goodwin Gas Stove and Meter Co., Philadelphia, Pa .. 120

PURIFYING MATERIAL.

Connelly & Co., New York City 143
Perkins & Co., New York City 134

STEAM BLOWER FOR BURNING BREESE.

H. E. Parson, New York City 134

PROCESSES.

Gwynne Harris New York City 138
Strong Gas and Fuel Co., Yonkers, N. Y. 134
Thomas B. Fogarty, New York City 142

GAS FIXTURES.

Mitchell, Vance & Co., New York City 137

CEMENT.

F. O. Norton, New York City 137

BOOKS.

King's Treatise 140
Gas Analyst's Manual 141
Scientific Books 138
Cathels' Gas Consumers' Manual 143
Fodell's Book-Keeping 143

WANTED.

A Situation as either Superintendent or Assistant in a Gas Works.

Thoroughly understands the manufacture and distribution of gas in all its branches; also gas fitting, bookkeeping, etc.; references good. Address

"GAS SUPT.," 203 SOUTH WILLIAM STREET,
570-2t SOUTH BEND, IND.

Meters For Sale.

300 TWO-LIGHT DRY METERS,

In good order. Have been but little used.

Will be sold very low, in lots to suit customers. Address
"GAS COMPANY," care Am. Gas Light Journal.

GREENOUGH'S "DIGEST OF GAS LAW."

This valuable and important work, a copy of which should be in the possession of every gas company in the country, whether large or small, is now ready for delivery. As a book of reference it will be found invaluable. It is the only work of the kind which has ever been published in this country, and is most complete. Handsomely bound.

Price, $5.00.

Orders may be sent to the author,

CHARLES P. GREENOUGH,
Counsel for the Boston Gas Light Company.
39 Court St. Boston, Mass.

COOKE BROTHERS'
(OF LONDON)
Oxide of Iron
FOR THE
PURIFICATION OF GAS.

We have been appointed agents for the United States, West Indies, and Canada, for the sale of the above article, and are authorized to receive orders for its delivery at any required port this side of the Atlantic. Messrs. Cooke Brothers are supplying their Oxide to all the leading Gas Companies in England and on the Continent. Testimonials from many of these companies can be seen at our office, or copies sent on request.

PERKINS & CO.,
(Box 3695) **45 South St., N. Y.**

FOR SALE

Columns (20 ft. high, Cast Iron), Girders, Angle Iron, King Posts, and the Internal Framing of two 48-feet Holders.

The above materials are as good as new. Apply to
GAS WORKS, WILMINGTON, DEL.
570-tf THOS. CURLEY, Supt.

E. McMILLIN & CO.,

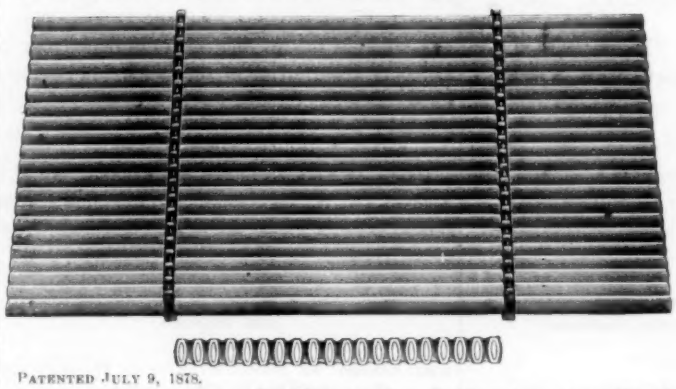
IRONTON, O.,

Gas Engineers and Contractors

GAS WORKS LEASED OR PURCHASED.

Correspondence solicited.

CHURCH'S REVERSIBLE SCREEN FOR GAS PURIFIERS



PATENTED JULY 9, 1878.

REVERSIBLE,
Very Durable
EASILY REPAIRED.
Oval Slats, with Malleable Iron Cross Bars.

Apply to
JOHN CABOT,
LAWRENCE, MASS.

In Use at the Following Gas Works:

Lawrence, Mass.	Gloucester, Mass.	Sedalia, Mo.	St. John, N. B.	New Haven, Conn.
Roxbury, "	Taunton, "	Lawrence, Kan.	Portland, Maine.	Birmingham, Conn.
Cambridge, "	Salem, "	Reno, Nev.	Manchester, N. H.	Detroit, Mich.
Waltham, "	Clinton, "	Jersey City, N. J.	Nashua, N. H.	Lansing, Mich.
Lowell, "	Dorchester "	Passaic, N. J.	Burlington, Vt.	Hamilton, Ohio.
Charlestown "	Selma, Ala.	Jacksonsonville, Fla.	Newport, R. I.	Cleveland, Ohio.
Springfield, "	Charleston, S. C.	Richmond, Ind.	Pawtucket, R. I.	Gallipolis, Ohio.
Boston, "	Charlestown, W. Va.	Denver, Col.	Providence, R. I.	Cincinnati, Ohio.

Parson's Steam Blower,

FOR IMPROVING BAD DRAUGHT IN BOILERS, AND FOR BURNING BREEZE OR OTHER WASTE MATERIAL.

PARSON'S TAR BURNER,

FOR UTILIZING COAL TAR AS FUEL.

PARSON'S AIR JET TUBE CLEANER,

FOR CLEANING BOILER TUBES.

These devices are all first-class. They will be sent to any responsible party *for trial*. No sale unless satisfactory. Manufactured by the WATERTOWN STEAM BLOWER COMPANY.

H. E. PARSON, Supt., 42 PINE ST., N. Y.

CIRCULAR TO GAS LIGHT COMPANIES.

BRANCH OFFICE OF THE STRONG GAS FUEL AND LIGHT COMPANY,
CORNER BROADWAY AND MAIN STREET, YONKERS, July 2, 1881.

The YONKERS FUEL GAS COMPANY is now in successful operation, manufacturing Water Gas by the STRONG PROCESS, for HEAT, POWER, and LIGHT.

It has about two and a half miles of mains already in use through the heart of the city of Yonkers, and is supplying gas for cooking, heating, and various industrial purposes.

The problem of a purely fuel gas is at length practically solved, and is a complete success. That it must speedily go into universal use is apparent to everyone.

Gas Light Companies are cordially invited to visit Yonkers and inspect this new system, which, if electricity *should* eventually drive them out of the field of illumination, will open to them another field still more vast and fruitful, and from which they never can be dispossessed. The Westchester Gas Light Company of the city of Yonkers employes the Lowe Process for making its gas. Here, then, can be seen, side by side in business competition, the Strong and the Lowe against the Motay and the old coal gas methods, and each observer will be enabled to form his own opinion as to their relative power and value. The STRONG GAS FUEL AND LIGHT COMPANY is the proprietor for the State of New York of the Strong Patents, five in number, and of the Lowe Patents, two in number. All applications for licenses or for information should be addressed, as above, to

R. W. VAN PELT, *President of the Company,*
And also President of the Yonkers Fuel Gas Co., and of the Westchester Gas Light Co.

Awarded the Semi-Centennial Gold Medal by the Am. Inst., 1881. Awarded the First Premiums at St. Louis, '81 & '82.

AMERICAN METER CO.,

SOLE MANUFACTURERS OF THE

"ECONOMY" GAS STOVES

In presenting our "Economy" Gas Cooking Stoves for the season of 1883, we would state that we are most firmly convinced of their superior efficiency, durability, and economical use of gas for culinary purposes. To promptly meet the demand we anticipate for these Stoves, we have arranged to keep large and varied stocks at our manufactories and agencies.

These Stoves have been awarded the *Semi-Centennial Gold Medal* and *Medal of Superiority* at the Exhibitions of the American Institute, 1881 and 1882, the *First Premiums* at the St. Louis Fairs, 1881 and 1882, and the *Gold Medal* of the Union Universelle de l'Art Culinaire. AMERICAN METER COMPANY.

"ECONOMY" GAS STOVES.

All sizes of our "Economy" Range, from "6A" upward,

ARE FITTED WITH THE

NEW AND IMPROVED ROASTING OVEN DOOR

With these Stoves all qualities of Gas can be used.

NO EXTRA CHARGE FOR NICKEL PLATED FITTINGS.

UNEQUALED ECONOMY OF GAS FOR THE QUANTITY OF COOKING DONE.

A THOROUGHLY DIFFUSED HEAT THROUGHOUT THE WHOLE STOVE.

ALL THE OVENS TIGHT, JACKETED, AND PERFECTLY VENTILATED.

PATENT SMOKELESS GAS-AND-AIR BURNERS OF SUPERIOR POWER FOR BOILING, FRYING, STEWING, PRESERVING, JELLYING, HEATING SAD-IRONS, ETC.

GENERAL AND SPECIAL SUPERIORITY IN ALL COOKING OPERATIONS.

No. 9.—"Economy" Gas Range, with Improved Roasting Oven Door.

A BROILER UNDER THE FIRE WITHOUT SMOKE.

AN OPEN ROASTER UNDER THE FIRE WITHOUT SMOKE.

UNSURPASSED EXCELLENCE OF WORKMANSHIP AND FINISH.

DOWNWARD RADIATING BURNERS OF GREAT POWER

RADIATING BURNERS THAT CONSUME THE GAS OF ANY LOCALITY WITHOUT ODOR OR SMOKE.

BURNERS THAT ARE PRACTICALLY INDESTRUCTIBLE FROM TIME OR USAGE.

THESE STOVES ARE MADE IN ALL SIZES, TO MEET THE REQUIREMENTS OF ANY FAMILY.

SEND FOR ILLUSTRATED CATALOGUE. **AMERICAN METER CO., New York and Philadelphia.**

J. H. GAUTIER & CO..
CORNER OF
GREENE AND ESSEX STREETS,
JERSEY CITY, N. J.
MANUFACTURERS OF
Clay Gas Retorts,
Gas House Tiles,
Fire Bricks, Etc. Etc.
Ground Clay, Fire Brick and Fire Sand in Barrels.
J. H. GAUTIER. T. B. GAUTIER.
C. E. GREGORY. C. E. GAUTIER.

BROOKLYN
Clay Retort & Fire Brick Works,
(EDWARD D. WHITE & CO.)
Manufacturers of Clay Retorts, Fire Brick, Gas House and other Tile.
VAN DYKE, ELIZABETH, RICHARDS & PARTITION STS.
Office, 88 Van Dyke St., Brooklyn, N. Y.

LACLEDE FIRE BRICK MFG. CO.,
MANUFACTURERS OF
Fire Brick, Gas Retorts,
AND
ST. LOUIS STANDARD SEWER PIPE.
Blast Furnace and Cupola Linings, every description of Fire Clay Material, Fire Clay Flue Linings, Chimney Tops Dry Milled and Crude Fire Clays, etc.
OFFICE AND DEPOT
901, 903, and 905 Pine Street,
ST. LOUIS, MO.

ESTABLISHED IN 1845.
B. KREISCHER & SONS,
OFFICE FOOT OF HOUSTON ST., E.R., N.Y.
Gas Retorts,
TILES, FIRE BRICK.
AND EVERYTHING IN THE FIRE CLAY LINE.

MANHATTAN
FIRE BRICK & ENAMELLED CLAY
RETORT WORKS
ADAM WEBER.
CLAY GAS RETORTS
AND RETORT SETTINGS,
FIRE BRICKS, TILES, ETC.,
Office and Works, 15th Street and Avenue C., N. Y.

Borgner & O'Brien,
MANUFACTURERS OF
CLAY GAS RETORTS
AND RETORT SETTINGS,
FIRE BRICKS, TILES, ETC.
23d St., Above Race,
PHILADELPHIA.
TWENTY YEARS' PRACTICAL EXPERIENCE.

Works, LOCKPORT, PA.
GARDNER BROTHERS,
—ESTABLISHED 1864.—
Works, MT. SAVAGE JUNCTION, MD.
CLAY GAS RETORTS, RETORT SETTINGS, FIRE BRICK, TILES, Etc.
MINERS & SHIPPERS OF FIRE CLAY. OFFICE, 116 SMITHFIELD ST., PITTSBURGH, PA.
C. H. SPRAGUE, No. 13 EXCHANGE PLACE, BOSTON, MASS., Agent for the New England States.

OFFICE, 418 to 422 East 23d St., New York. ESTABLISHED 1856. WORKS, PERTH AMBOY, NEW JERSEY.
HENRY MAURER,
Excelsior Fire Brick & Clay Retort Works
CLAY GAS RETORTS, BENCH SETTINGS, FIRE BRICK, TILES, ETC.

Works, Howard Station, Mo. Pacific R.R.
EVENS & HOWARD,
Office, 916 Market Street, St. Louis, Mo.
FIRE BRICK. GAS RETORTS, AND RETORT SETTINGS.
SEWER PIPE, 3 TO 24 INCHES DIAMETER.
Glass Pot Clay, Ground Fire Clay, in Barrels and in Bulk. All kinds of Fire Clay Goods.

CHICAGO
RETORT & FIRE BRICK WORKS,
394 to 402 N. WATER ST., CHICAGO, ILL.
GEORGE C. HICKS, PRESIDENT.
STANDARD
Clay Retorts and Settings,
BLOCKS & TILES
Of every Shape and Size to Order.
STANDARD FIRE BRICKS.
Doubled Milled Clay, Ground Bricks, and Fine Sand of Purest Quality.
Non-Conducting Porous Bricks for Bench Fronts.
Special goods for Smelting, Assaying, and Chemical Manufacture.

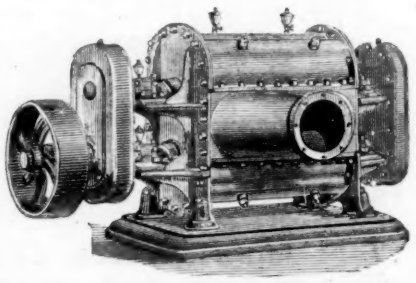
CHAS. TAYLOR, Manufacturer. J. ANDERSON, Manager.
CINCINNATI
Gas Retort & Fire Brick Co.
TAYLOR & ANDERSON,
(Late CHAS. TAYLOR, estab. 1872.)
CONTRACTORS, AND MANUFACTURERS OF
GAS RETORTS, FIRE BRICK, AND TILE.
BLAST FURNACE LININGS; CUPOLA BLOCKS; GRATE SETTINGS; STOVE LININGS; FELL'S, DANK'S AND FRANK'S SMOKE PREVENTOR TILES; DANK'S ROTARY PUDDLING FURNACE TILES; SIEMENS' & OTHER GAS REGENERATIVE FURNACE TILES; XXX PRESSED GAS WORKS FURNACE BLOCKS; FIRE CEMENT, ETC., ETC.
POROUS NON-CONDUCTING BRICKS FOR BENCH FRONTS.
Plans furnished, and competent men supplied to put up work.
BRANCH WORKS, NEW CUMBERLAND, W. VA.
General Office and Works,
BURNS ST., CINCINNATI, O.

THE PELOUZE & AUDOUIN
CONDENSER
(Gold Medal, Paris Exposition, 1878)
WITH
Smedberg's Improvements.
U. S. PATENTS, May 26, 1874, and July 21, 1874.
This Condenser may fairly be considered a STANDARD and INDISPENSABLE machine. During the eight years which have elapsed since its introduction, it has been adopted in the following gas works:

San Francisco,	Municipal, N. Y.,	New Orleans,
Boston,	Sacramento,	Quincy,
Cardenas,	Matanzas,	Modesto,
Reno,	Hannibal,	Newark, O.,
Petaluma,	Red Bluff,	Louisville,
Indianapolis,	Oakland,	Salt Lake City.
Denver,	Ohio Penitentiary,	Hotel del Monte
Napa Insane Asylum.		

The P. & A. Condenser is *guaranteed to arrest every drop of coal tar.* Official test-buttons, from the New Orleans Gas Light Company will shortly be distributed. Address
THE SHICKLE, HARRISON & HOWARD IRON CO., St. Louis, or
JAS. R. SMEDBERG, 42 Pine St. (Room 18), N. Y.
SMEDBERG'S NON-OSCILLATING DIFFERENTIAL GAUGE

P. H. & F. M. Roots'



IMPROVED GAS EXHAUSTER

With Engine on same Bed Plate, or without.

BYE-PASSES, GAS VALVES, GOVERNORS, ELBOWS, PIPE-FITTINGS, &C., FURNISHED TO ORDER.

P. H. & F. M. ROOTS, Patentees and Manufacturers, CONNERSVILLE, IND

S. S. TOWNSEND, General Agent, 6 Cortland St. and 8 Dey St., N. Y.
JAS. BEGGS & CO., Selling Agents, 8 Dey St., N. Y.
WM. COOKE, Selling Agent, 6 Cortland St., N. Y.

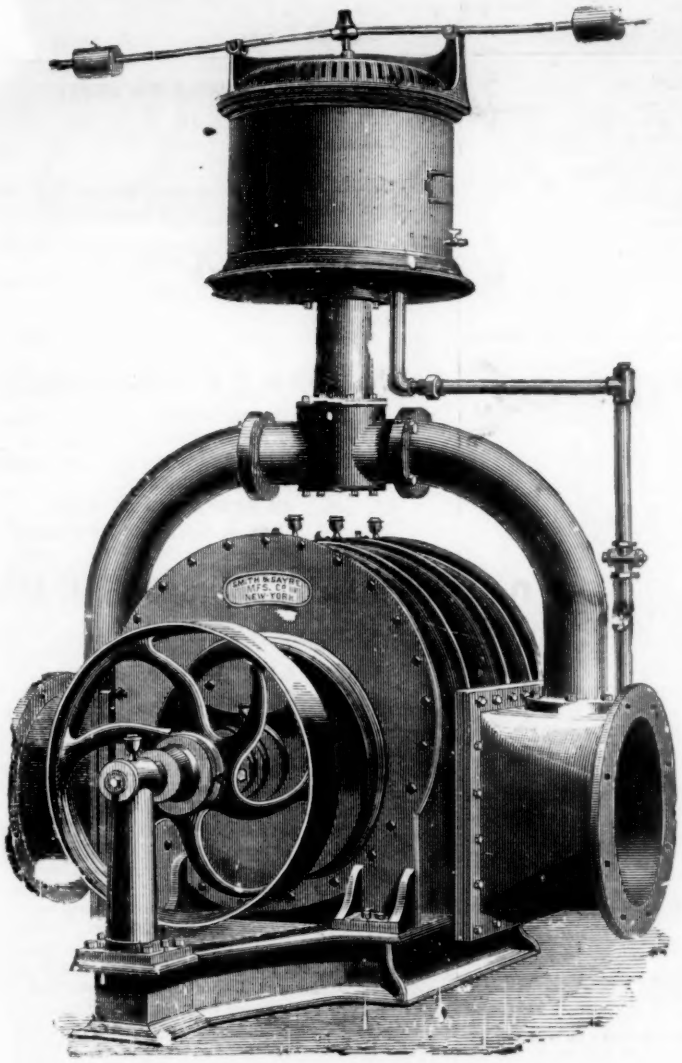
Send for Illustrated Catalogue and Price List.

SMITH & SAYRE MANUFACTURING COMPANY.

No 245 BROADWAY, N. Y.

BUILDERS OF

Machinery and Apparatus for Gas Works.



MACKENZIE'S PATENT ROTARY AND STEAM JET GAS EXHAUSTERS, GOVERNORS, COMPENSATORS, BY-PASSES, CONDENSERS, WASHERS, SCRUBBERS.

ISBELL'S PAT. AUTOMATIC STREET PRESSURE GOVERNOR.

HIGH SERVICE GOVERNOR, GAS AND WATER VALVES, HYDRAULIC MAIN DIP REGULATOR, BENCH CASTINGS, Etc. PURIFYING BOXES, TOWER SCRUBBERS, WITH AUTOMATIC WATER DISTRIBUTOR. *ISBELL'S PATENT SELF-SEALING RETORT DOORS.*

Plans and Estimates for the Improvement, Extension, or Alteration of Gas Works, or the Construction of New Works.

G. G. PORTER, *President* CHARLES W ISBELL, *Secretary.*

MITCHELL, VANCE & CO.

Manufacturers of

CHANDELIERS,

And Every Description of

GAS FIXTURES.

Also Manufacturers of

Fine Gilt Bronzes and Marble Clocks, warranted best Time-keepers Mantle Ornaments, &c.

Salesroom, 836 BROADWAY,

NEW YORK.

Special designs furnished for Gas Fixtures for Churches Public Halls Lodges, &c.

F. O. NORTON,

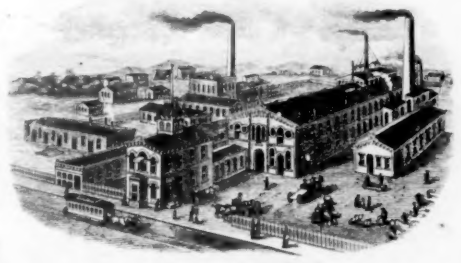
MANUFACTURER OF

Hydraulic Cement.

Specially adapted for gas works Under water it is capable of giving better results than Portland or any other cement

92 Broadway, New York.

LUDLOW VALVE MFG. CO.



OFFICE AND WORKS,

938 to 954 River Street and 67 to 83 Vail Av., TROY, N. Y.

Hydraulic Main Dip Regulators, also Check Valves, Foot Valves, and Fire Hydrants.

Send for Circulars.

Valves.—Double and Single Gate, ½ in. to 48 in., outside and inside Screws. Indicator, etc., for Gas, Water, Steam, and Oil.

Send for Circulars.

New Books.

DISTILLATION OF COAL TAR AND AMMONIACAL LIQUOR.

By GEORGE LUNGE. Price $8.50.

A TREATISE ON THE COMPARATIVE COMMERCIAL VALUES OF GAS COALS AND CANNELS.

By DAVID A. GRAHAM. 8vo., Cloth. Price $3.

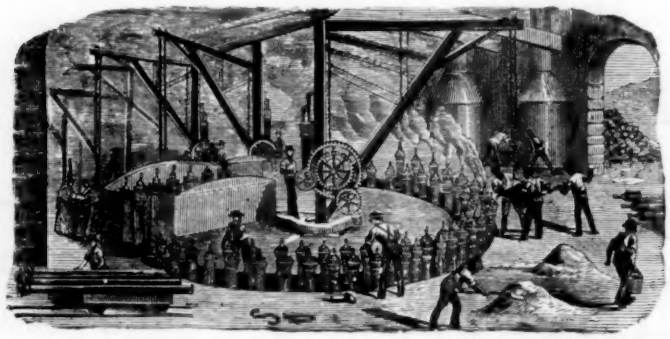
Orders for these books may be sent to this office.

A. M. CALLENDER & CO.,
42 PINE ST., N. Y. CITY.

A. H. M'NEAL,

BURLINGTON, N. J.

Flange-Pipes



General Foundry Work.

CAST IRON PIPES

FOR WATER AND GAS

JAMES S. MOORE, Pres.
BENJAMIN CHEW, Treas.

JAS. P. MICHELLON, Sec.
WM. SEXTON, Supt.

GLOUCESTER IRON WORKS

GLOUCESTER CITY N. J.

Cast Iron Gas & Water Pipes, Stop Valves, Fire Hydrants, Gasholders. &c.

Office No. 6 North Seventh Street, Philadelphia.

ESTABLISHED 1856.

WARREN FOUNDRY AND MACHINE CO.,

WORKS AT PHILLIPSBURGH, N. J.

NEW YORK OFFICE, 162 BROADWAY.

Cast Iron Water and Gas Pipe

FROM TWO TO FORTY-EIGHT INCHES DIAMETER.

ALSO ALL SIZES OF

FLANGE PIPE for Sugar House and Mine Work.

Branches, Bends, Retorts, Etc., Etc. 436-1

SCIENTIFIC BOOKS.

We are prepared to furnish to GAS MANAGERS and others interested in the topics treated of, the following Books, at prices named :

KING'S TREATISE ON THE MANUFACTURE OF COAL GAS. Three vols.; $10 per vol.

GAS MANUFACTURE, by WILLIAM RICHARDS. 4 to, with numerous Engravings and Plates, in Cloth binding. $12.

THE GAS ANALYST'S MANUAL, by F. W HARTLEY. $2.50.

ANALYSIS, TECHNICAL VALUATION, PURIFICATION and USE OF COAL GAS, by Rev. W. R. BOWDITCH, M. A., with Engravings. 8 vo., Cloth. $4.50.

GAS MEASUREMENT AND GAS METER TESTING, by F. W. HARTLEY. $1.60.

GAS CONSUMERS HAND BOOK. by WM. RICHARDS. C. E. 18 mo Sewed. 20 Cents.

GAS CONSUMERS MANUAL, by E. S. CATHELS, C.E. 10 Cents

PRACTICAL TREATISE ON HEAT, by THOMAS BOX. Second edition. $5.

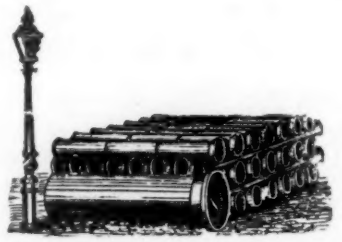
AIR AS FUEL, OR PETROLEUM AND OTHER MINERAL OILS UTILIZED BY CARBURETTING AIR, by OWEN C. D. ROSS, Member Institute Civil Engineers. 8 vo. Cloth. $1.50.

FODELL'S SYSTEM OF BOOKKEEPING FOR GAS COMPANIES. $5.

The above will be forwarded by Express, upon receipt of price.

We will take especial pains in securing and forwarding any other Works that may be desired, upon receipt of order. All remittances must be made by Check, Draft, or Post Office Money Order.

A. M. CALLENDER & CO.,
Room 18, No. 49 Pine St., N. Y



R. D. WOOD & CO.,

PHILADELPHIA

MANUFACTURERS OF

CAST IRON PIPE

FOR GAS AND WATER

Lamp Posts. Valves, Etc.

Mathew's Pat. Anti-Freezing Hydrants.

400 Chestnut Street

JAMES MARSHALL & CO.

Franklin Foundry and Pipe Works,

MANUFACTURERS OF

GAS, WATER, AND OIL PIPES

Works, 18th, 19th, 20th and Railroad Street.
Office, No. 23 Nineteenth Street.

Pittsburgh, Pa.

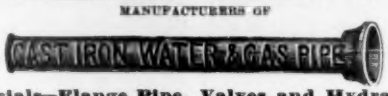
N.B.—Pipes from 3-inch and upwards cast in 12 ft. lengths.

☞ Send for Circular and Price List.

Mellert Foundry and Machine Co.

Limited. Established 1848.

MANUFACTURERS OF



Specials—Flange Pipe, Valves and Hydrants, Lamp Posts, Retorts, etc.

Machinery and castings for Furnaces, Rolling Mills, Grist and Saw Mills, Mining Pumps, Hoists, etc.

GENERAL OFFICE, - - - READING, PA.

To Gas Companies.

We make to order **CAP BURNERS** to burn any amount under a stated pressure. Send for samples.

Also, SERVICE CLEANERS, DRIP PUMPS, and STREET MAIN PROVING APPARATUS.

C. A. GEFRORER,
248 N. 8th Street, Phila., Pa.

NATIONAL COAL GAS COMPANY.

320 Broadway, N. Y., Rooms 50, 51 & 52.

H. P. ALLEN, President.

The process known as GWYNNE-HARRIS but from later most essential improvements, more appropriately called the ALLEN-HARRIS, or AMERICAN HYDROCARBON process for making "Water Gas," by the decomposition of superheated steam, in fire-clay retorts, set similarly to those in Coal Gas Works, is an established success. More than One Hundred Million cubic feet of gas have been made under this process, and for *permanency* and *brilliancy*, as well as economy both to the manufacturer and consumer, it is superior to any gas made by the old, or any other method.

Our process is *not intermittent* but continuous. The steam and the oil are admitted into the retorts by gauge cocks, and run for days without change. All the materials required, besides the steam, are 17 lbs. of Anthracite coal and about 3¼ gallons of Petroleum or Naphtha, per 1000 feet of brilliant gas.

Rights for sale. Inquire of the President.

JAMES R. FLOYD,

(SUCCESSOR TO HERRING & FLOYD)

Oregon Iron Works,

738, 740, 742 & 744 Greenwich St., N. Y.

Practical Builders of Gas Works,

MANUFACTURERS OF

ALL KINDS OF CASTINGS

AND

APPARATUS FOR GAS-WORKS.

BENCH CASTINGS
from benches of one to six Retorts each.
WASHERS; MULTITUBLAR AND AIR CONDENSERS; CONDENSERS; SCRUBBERS
(wet and dry), and
EXHAUSTERS
for relieving Retorts from pressure.
BENDS and BRANCHES
of all sizes and description.
FLOYD'S PATENT
MALLEABLE RETORT LID.
PATENT
SELF-SEALING RETORT LIDS.
FARMER'S
PATENT BYE-PASS DIP-PIPE.
SABBATON'S PATENT
FURNACE DOOR AND FRAME
BUTLER'S
COKE SCREENING SHOVELS.

GAS GOVERNORS,

and everything connected with well regulated Gas Works at low price, and in complete order.

SEELER'S CEMENT

for stooping leaks in Retorts.

N. B.—**STOP VALVES** from three to thirty inches—at very low prices.

Plans, Specifications, and Estimates furnished.

H. RANSHAW, Pres. & Mangr. T. H. BIRCH, Asst. Mangr.
WM. STACEY, Vice-Pres. R. J. TARVIN, Sec. & Treas.

STACEY MANUFACTURING CO.,

MANUFACTURERS OF

Single and Telescopic Gasholders,

IRON ROOFS, BRIDGES, LAMP POSTS,

WATER AND OIL TANKS, COAL ELEVATOR CARS,

COKE CRUSHERS,

BENCH CASTINGS,

And all kinds of Wrought and Cast Iron Work used in the erection of Coal and Oil Gas Works. Rolling Mill Machinery and Heavy Castings a Specialty.

Foundry: 33, 35, 37, & 39 Mill St., **Wrought Iron Works:** 16, 18, 20, 22, 24, & 26 Ramsey St.,

CINCINNATI, OHIO.

BARTLETT, HAYWARD & CO.

ARCHITECTURAL IRON WORKS

MANUFACTURERS OF

GAS HOLDERS, BENCH CASTINGS, MULTITUBULA WATER AND AIR CONDENSERS, COMMON AND TOWER SCRUBBERS, ROTARY & STEAM JET EXHAUSTERS, WROUGHT IRON ROOF FRAMES

MANUFACTURERS OF ALL DESCRIPTION OF GAS APPARATUS.

WORKS:

Cors. Pratt, Scott, McHenry, Ramsay and Bartlett Streets

BALTIMORE, MARYLAND.

Plans, Specifications, and Estimates furnished. Correspondence solicited. 467-1y

---

1842. DEILY & FOWLE. 1883

LAUREL IRON WORKS,

PHILADELPHIA.

Address; 39 Laurel St.

MANUFACTURERS OF

Casholders,

SINGLE AND TELESCOPIC,

With Cast or Wrought Iron Guide Frames.

Holders built at following places since 1880:

Mount Joy, Pa.	St. Hyacinth, Can.
Rockaway B'ch, L.I., N.Y. (2)	Norwalk, O.
Zanesville, O. (2	Brattleboro, Vt.
Lancaster, O.	Waltham, Mass (2)
Blackwell's Island N. Y.	West Chester, Pa.
Waltham, Mass., (1)	Baltimore, Md.
Dorchester, Mass.	Hollidaysburg, Pa.
Wheeling, West Va.	Galveston, Texas (2)
Lansing, Mich.	Marlboro, Mass.
Flint, Mich.	Denver, Col.
Galveston, Texas (1)	Chicago, Ill. (West Side).
Milton, Pa.	Pittsburgh, Pa. (South Side).
Scranton, Pa.	Pawtucket, R. I.
West Point, N. Y.	Brookline, Mass.
Fitchburgh, Mass.	Sherbrooke, Can.
New London, Conn.	Burlington, N. J. (2)
Derby, Conn.	Bridgeton, N. J.
Bridgeport, Conn.	Bay City, Mich.
Allegheny, Pa.	

Announcement.

BY ARRANGEMENT WITH

JOHN METHVEN,

of the London Gas Lt. Co., inventor of the

NEW STANDARD PHOTOMETER,

THE SOLE AGENCY FOR THE UNITED STATES IS VESTED IN THE UNDERSIGNED.

GEO. SHEPARD PAGE,

Wall Street, New York.

The Kerr Murray Mfg. Co.,

MANUFACTURERS OF

BENCH CASTINGS,

Boilers and Engines,

STEAM JET AND ROTARY EXHAUSTERS.

HOT TAR SCRUBBERS.

Annular and Pipe Air Condensers.

Multitubular Water Condensers,

WATER SPRAY WASHERS,

Purifiers, Ash Lime Trays, Improved Dry Center Seals, Meter Bye-Passes, Hub & Flange Stop Valves.

Gasholders,

SINGLE AND DOUBLE LIFT.

Latest and most improved patterns of gas apparatus, from 4 to 30 inch openings. Plans, specifications, and estimates furnished for erection of new and rebuilding of old works.

Kerr Murray Mfg. Co.,

FORT WAYNE, IND.

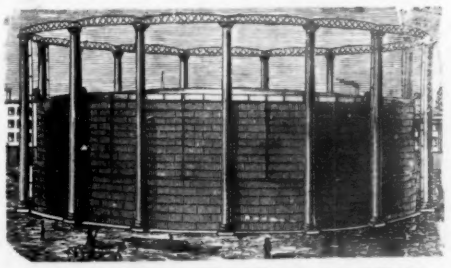
MORRIS, TASKER & CO.,

Limited,

Builders of Gas Works,

PHILADELPHIA, PA.

CONTINENTAL WORKS.



GASHLODERS OF ANY MAGNITUDE.

T. F. ROWLAND, Proprietor,

GREENPOINT, BROOKLYN, N. Y

ENGINEER AND MANUFACTURER OF

GAS-HOLDERS.

CONDENSERS, SCRUBBERS, VALVES PURIFIERS, RETORTS, and HYDRAULIC MAINS,

and all other articles connected with the Manufacture an Distribution of Gas. Plans and Specifications prepared and Proposals given for the necessary Plant for Lighting Cities, Towns, Mansions, and Manufactories.

P. MUNZINGER,

Engineer and Builder,

1211 MARKET ST., PHILA., PA.

Builder and Constructor of all kinds of Gas Machinery

ON THE LATEST AND MOST IMPROVED PLAN.

Bench Castings, Condensers, Scrubbers, Purifiers, Centre Valves, Gasholders, Stop Valves, Etc.

Estimates and Drawings Furnished on Application.

GAS COALS. GAS COALS. GAS COALS.

THE YOUGHIOGHENY RIVER COAL COMPANY,

Organized August 1, 1882.

MINERS AND SHIPPERS OF THE WELL-KNOWN

Ocean Mine Youghiogheny Gas Coal.

The Coal from the Ocean Mine (recently operated by Messrs. W. L. Scott & Co., of Erie, Pa.,) is now used by all the leading Gas Companies in the United States from Maine to Texas, and is recognized as *the only reliable Youghiogheny Gas Coal.*

Messrs. W. L. Scott & Co. and W. L. Scott, Esq., still retain their interest in the new Company, and the same general policy which has characterized the management of the mine under these gentlemen will be continued by the new Company. With largely increased facilities and *unlimited supply of Coal*, any demand made upon the Colliery will meet with prompt fulfillment.

PERKINS & CO., General Sales Agents,

New York P. O. Box, 3695. **45 SOUTH STREET, N. Y.**

THE "STANDARD" WASHER-SCRUBBER,

KIRKHAM, HULETT & CHANDLER'S PATENT.

Removes all the Ammonia and a large percentage of Sulphureted Hydrogen and Carbonic Acid.

These Machines have been adopted by the following American Gas Companies:

	Ft. per Day.		Ft. per Day.		Ft. per Day.		Ft. per Day.
Allegheny Company, Pa	1,000,000	Consolidated Co., Balt., Md	2,000,000	New Company, Havana, Cuba	750,000	Richmond Co., Indiana	250,000
Boston Co., Mass	2,000,000	Derby Co., Birmingham, Conn	250,000	Newport Co., Rhode Island	250,000	Roxbury Co., Mass	500,000
Citizens' Co., Newark, N. J.	500,000	Equitable Co., Baltimore, Md	1,000,000	Providence Co., Rhode Island	1,500,000	Wheeling Co., West Va	500,000
Columbus Co., Ohio	500,000	Metropolitan Co., N. Y. City	2,000,000	Quebec Company, Canada	250,000	Williamsburgh Company, N. Y.	1,200,000

The "Standard" is in use by English and other Foreign Companies to an aggregate capacity of 145,000,000 Feet per Day.

Allegheny Gas Works, Allegheny, Pa., February 5, 1883.

Geo. S. Page: Dear Sir—The "Standard" Washer I bought from you last summer is giving us entire satisfaction. I am now passing 740,000 feet through it in 24 hours, and using half a gallon of water per 1,000 feet, and can keep my gas free from Ammonia. The strength of the liquor is 12 degrees Twaddle's hydrometer, or what is termed 24-oz. liquor. The temperature of the water going into the Washer is 46 degrees, and at outlet is 60 degrees.

Yours respectfully, [Signed] Robt Young, Eng. and Supt.

W. A. Stedman, Esq., Treasurer Newport Gas Light Co., writes. under date of Feb. 7, 1883: "It is the best apparatus I have ever used for removing Ammonia and other impurities from gas. There is no clogging; it causes us no anxiety, and requires only the ordinary attention of an unskilled workman. *It saves about* 40 *per cent. of the cost of lime purification.*

The concentrated ammoniacal liquor produced has an immediate sale at prices much above what has heretofore been offered, or can be converted into sulphate of ammonia, with large profits, by the use of the KIRKHAM-PAGE SULPHATE APPARATUS, estimates for the erection of which will be given gas companies.

GEO. SHEPARD PAGE, No. 49 WALL STREET, NEW YORK,

SOLE AGENT FOR THE WESTERN HEMISPHERE.

KING'S TREATISE ON COAL GAS.

The most complete work on Coal Gas ever published. Three vols., bound, $30; unbound, $22.80. **A. M. CALLENDER & CO.,** 42 Pine Street, N. Y.

GAS COALS. GAS COALS. GAS COALS,

NEWBURGH

ORREL COAL COMPANY,

MINERS AND SHIPPERS OF

Newburgh Orrel, Tyrconnell and Palatine Gas Coals.

ALSO SHIPPERS OF

FOUNDRY COKE

Mines Situated at

NEWBURGH, FLEMINGTON, AND FAIRMONT, WEST VIRGINIA,

HOME OFFICE,

25 S. Gay St., Baltimore.

CHARLES MACKALL,
SECRETARY.

CHAS. W. HAYES, Agent in New York,
No. 111 Broadway - - Trinity Building.

Shipping wharves at Locust Point. References furnished when required. Special attention given to chartering vessels.

THE DESPARD COAL COMPANY
OFFER THEIR SUPERIOR
DESPARD COAL

To Gas Light Companies and Manufacturers of Fire Clay Goods throughout the country.

ROUSSEL & HICKS, Agents, 71 Broadway, New York.
BANGS & HORTON, No. 31 Duane street, Boston.
Mines in Harrison County, West Virginia.
Wharves Locust Point, Company's Office, 17 German St., } Baltimore.

Among the consumers of Despard Coal, we name: Manhattan Gas Light Company, New York; Metropolitan Gas Light Company, New York; Jersey City Gas Light Company, N. J.; Washington Gas Light Company; Portland Gas Light Company, Maine

Reference to them is requested. 204-.

J. McCRICKART, Pres't. J. E. McCRICKART, Mang'r.

THE FORT PITT COAL CO.,

Miners and Shippers of

COAL FORT PITT GAS COAL COKE

No. 337 Liberty Street,

PITTSBURGH, PENN.

G. W. DRESSER, C.E.,

Member American Society Civil Engineers.

CONSULTING ENGINEER

ON ALL MATTERS PERTAINING TO

Gas Manufacture.

THE

PENN GAS COAL COMPANY

OFFER THEIR

COAL, CAREFULLY SCREENED,

AND PREPARED FOR

GAS PURPOSES.

Their Property is located in the Youghiogheny Coal Basin, near Irwin's and Penn Station on the Pennsylvania Railroad, and on the Youghiogheny River

OFFICES

No. 209 South Third Street, Phil'a. 90 Wall Street, New York.

PLACES OF SHIPMENT.

Pennsylvania Railroad, Pier No. 2 (Lower Side), Greenwich Wharves, Delaware River.
Pier No. 1 (Lower Side), South Amboy, N. J.
366-1-

CANNELTON COAL COMPANY

Miners of the celebrated CANNELTON CANNEL, acknowledged to be the *best enricher* produced in this country, yielding 10,000 cubic feet of 64.54 candle gas per ton of 2,240 pounds.

J. TATNALL LEA, Treasurer, P. O. Box 1747 Philadelphia

SALES AGENTS: C. & O. R'way Coal Agency, N. Y. BENEDICT & DOWNS, New Haven. DANIEL W. JOB & CO., Boston. DAVIS, MAYER & CO., Baltimore

Chesapeake & Ohio Railway Coal Agency,

FOR THE SALE OF THE

SUPERIOR KANAWHA GAS COALS,

Also, SPLINT AND STEAM COALS.

From the Kanawha and New River Regions, on the line of the Chesapeake & Ohio R'way.

C. B. ORCUTT, SECRETARY. J. J. GORDON, SALES AGENT. } OFFICE, 22 PINE STREET, N Y.

WM. A. McINTOSH, Prest. THOS. M. CARNEGIE, Vice-Prest. W. P. DEARMIT, Treas.

NEW YORK AND CLEVELAND GAS COAL COMPANY,

MINERS AND SHIPPERS OF

YOUGHIOGHENY GAS COAL.

General Office, 41 FIFTH AVENUE, PITTSBURGH, PA.
Branch Office, 130 WATER STREET, CLEVELAND, OHIO.

THOS. AXWORTHY, Agent, CLEVELAND, OHIO.

THE GAS ANALYST'S MANUAL.

BY F. W. HARTLEY, A.I.C.E., M.S.E. E. & F. N. SPON, PUBLISHERS

PRICE, $2.50.

CONTENTS SECTION I.—The purposes of photometry. Standard light. Standard burner. Gas Works Clauses Act Amendment Act, 1871.—Regulations in respect of testing apparatus, mode of testing for illuminating power, and for sulphuretted hydrogen. Description of standard apparatus. The photometer room. Preparation of candles. Testing operations. Readings. Correction for gas consumpt. Corrections for candles' consumpt. Corrections for barometric pressure and temperature. Ordinary photometers. The inferential or jet photometers. To set the jet photometer at work. To rate the jet photometer.

SECTION II.—Duration and mode of testing in London, sulphuretted hydrogen, ammonia, sulphu compounds. Preparation of solutions. Fitting up. To set the apparatus at work. Analysis.

SECTION III.—Ammonia. Sulphuretted hydrogen. Carbonic acid. The Cooper's Tube, or Eudiometer. To calculate weight of sulphur. Harcourt's color test. A rapid and accurate methodof estimating sulphur in coal gas. Specific gravity. To find the specific gravity of dry gas. To correct the bulk and find the weight of gas.

APPENDIX.—Rules and tables to facilitate the calculations necessary in the determination of the illuminating value and degree of purity of coal gas. Photometry. Ammonia and sulphur. Proving of testing meters in London. The gas referees' cubic-foot measure. Times and mode of testing for pressure in London. Proposed standards of light.

A. M. Callender & Co., 42 Pine Street, N. Y.

INTERNATIONAL--1876--EXHIBITION.

The U. S. Centennial Commission

HAVE DECREED AN AWARD TO

HARRIS, GRIFFIN & CO.,

12th and Brown Sts., Philadelphia, and 49 Dey St., N. Y., U. S. A.,

FOR THE FOLLOWING REASONS:

The Exhibit consists of a Series of METERS from the Largest Size Station Meters for the use of the MANUFACTURE OF GAS, to those for the use of the ORDINARY CONSUMER. The Instruments are WELL MADE, RELIABLE as to INDICATION, and embody a number of sundry improvements which, with the general character of the Exhibit, entitle the whole to commendation.

Attest—J. L. CAMPBELL, Secretary, pro-tem. Signed—A. T. GOSHORN, Director General J. R. HAWLEY, President

CHARLES E. DICKEY. JAMES B. SMALLWOOD. CHARLES H. DICKEY.

Maryland Meter and Manufacturing Co.,

DICKEY, TANSLEY & CO.,

Established 1866.

Nos. 22 and 24 Saratoga Street, Baltimore, Md.

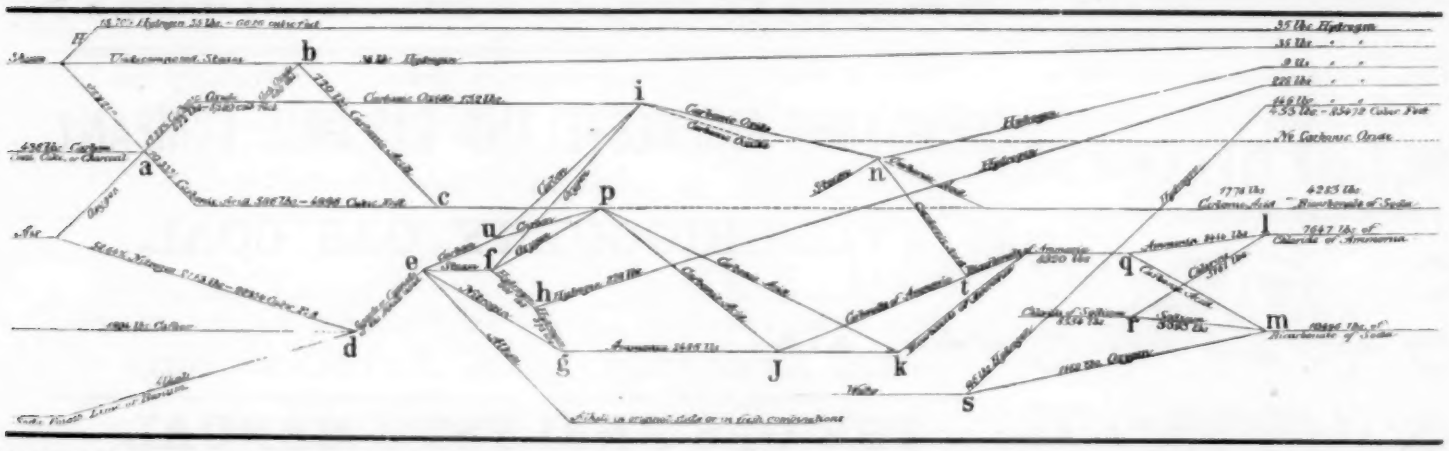
MANUFACTURERS OF

DRY GAS METERS, STATION METERS, GLAZED METERS, TEST METERS, METER PROVERS, PRESSURE AND VACUUM REGISTERS, GOVERNORS, INDICATORS, SERVICE AND METER COCKS.

Meter Connections, Patent Car Fare Registers, Church and Tower Clocks with or without Illuminating Dials, and other light Machinery.

FOGARTY'S

PROCESS OF MANUFACTURING WATER GAS.



This Process produces Hydrogen Gas free from Carbonic Oxide, and simultaneously Ammonia and Bicarbonate of Soda.

It consists in—1st, Making a cheap heating gas through the action of steam and air on incandescent carbon 2d Converting the nitrogen of the gas into ammonia. 3d, Converting all the carbonic oxide in the gas into carbonic acid. 4th, Purifying the gas from carbonic acid, without cost, by means of the ammonia produced. 5th, Decomposing the bicarbonate of ammonia produced by means of common salt, producing chloride of ammonia and bicarbonate of soda. For information, address

THOMAS B. FOGARTY,

P. O. Box 2568. ROOM 25 No. 18 WALL STREET, NEW YORK CITY.

T. C. HOPPER, Prest. WM. H. HOPPER, Vice-Prest. WM. N. MILSTED, Gen. Supt. and Treas. WM. H. DOWN, Sec

AMERICAN METER COMPANY,

WET AND DRY GAS METERS. PRESSURE REGISTERS. METER PROVERS,
STATION METERS. PRESSURE & VACUUM REGISTERS. PORTABLE TEST METERS.
EXHAUSTER GOVERNORS. PRESSURE & VACUUM GAUGES. EXPERIMENTAL METERS.
DRY CENTRE VALVES. CRESSON GAS REGULATORS. AMMONIA TEST METERS.
GOVERNORS FOR GAS WORKS. MARSLAND WATER METERS. BAR AND JET PHOTOMETERS.

Manufactories:
512 W. 22d St., N. Y.
Arch & 22d Sts., Phila.

GAS STOVES,
SUGG'S "STANDARD" ARGAND BURNERS,
SUGG'S ILLUMINATING POWER METER,
Wet Meters, with Lizar's "Invariable Measuring" Drum.

Agencies:
37 Water Street, Cincinnati.
20 South Canal Street, Chicago.
810 North Second Street, St. Louis.
122 & 124 Sutter St., San Francisco.

HELME & McILHENNY.

Successors to Harris & Brother.

ESTABLISHED 1848.

PRACTICAL GAS METER MANUFACTURERS,

Continue as heretofore at the OLD ESTABLISHMENT, Nos. 1115 and 1117 Cherry Street, Philadelphia, Pa

To manufacture Wet and Dry Gas Meters, Station Meters, Experimental Meters, Meter Provers, Centre Seals, Governors, Pressure Registers, Indicators, Photometers, and all kinds of Gas Apparatus; Also furnish all other Articles appertaining to the use of Gas Works.

From our long Practical Experience of the Business (covering a period of 33 years) and from our personal supervision of all Work, we can guarantee all orders to be executed promptly, and in every respect satisfactorily.

WILLIAM HELME. JOHN McILHENNY.

WM. WALLACE GOODWIN, Prest. and Treas. WM. H. MERRICK, Vice-Prest. H. DUMONT WAGNER, Supt. S. L. JONES, Sec. S. V. MERRICK, Asst. Sec

THE GOODWIN GAS STOVE AND METER COMPANY,

Successors to W. W. GOODWIN & CO.

No. 1012, 1014 and 1016 Filbert Street, Philadelphia, Pa.

No, 142 Chambers Street, New York

MANUFACTURERS OF GAS STOVES FOR COOKING AND HEATING PURPOSES.

Dry and Wet GAS METERS, Station Meters (Square, Cylindrical or in Staves) Glazed Meters, King's and Sugg's Experimental Meters, Lamp Post Meters, Etc., Etc., Meter Provers (sizes 2, 5 and 10 feet), Pressure Guages of all kinds, Pressure Registers, Pressure and Vacuum Registers, Pressure Indicators (sizes 4 inch, 6 inch and 9 inch), King's Pressure and Vacuum Gauges, Dry and Wet Centre Seals, Dry and Wet Governors, Exhauster Governors, Photometers of all descriptions. Letheby's Sulphur and Ammonia Test Apparatus complete—also Testing and Chemical Apparatus of all kinds, and of the most perfect description, for all purposes relating to Gas.

Goodwin's Improved Lowe's Jet Photometer.

Special attention to repairs of Meters, and all apparatus connected with the business.
All work guaranteed first class in every particular, and orders filled promptly.

D. McDONALD & CO.,

GAS METER MANUFACTURERS.

(Established 1854.)

No. 51 Lancaster Street, Albany. N. Y.

STATION METERS, EXPERIMENTAL METERS, METER PROVERS, PRESSURE & VACUUM REGISTERS, PRESSURE GAUGES, ETC.

Also STAR GAS STOVES, RANGES, and HEATING STOVES.

We use only the very best materials, and employ the most skilled labor, and by our long experience (29 years) and personal supervision of every detail, we feel justified in assuring the public that our goods will give perfect satisfaction. Every Meter emanating from our establishment will bear the State Inspector's BADGE, and will be fully warranted by us. Our Annual and Calendar will be sent to Gas Companies upon application.

Cathel's Gas Consumer's Manual.

Enables every Gas Consumer to ascertain at a glance, without any previous knowledge of the Gas Meter, the quantity and money value of the Gas consumed. Also the best method of obtaining from Gas the largest amount of its light.

It will be to the advantage of Gas Companies to supply their Consumers with one of these Guides, as a means of preventing complaints arising from their want of knowledge in regard to the registration of their meters. For sale by

A. M. CALLENDER & CO.,
42 Pine St., New York.

NOW READY AND FOR SALE.

FODELL'S
System of Bookkeeping

FOR GAS COMPANIES.

Price $5, which should be sent either in Check P. O. Ord or Registered Letter.

Blank Books, with printed headings and forms on this system, will be supplied to Gas Companies, by applying to W. P. FODELL Philadelphia, or

A. M. CALLENDER & CO
OFFICE GAS LIGHT JOURNAL, 42 Pine St., N. Y.

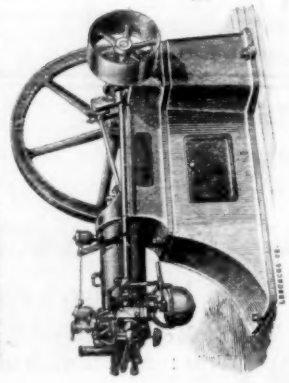
Iron Sponge
AND
GAS EXHAUSTERS.

CONNELLY & CO.,

No. 407 BROADWAY, NEW ORK CITY

SCHLEICHER, SCHUMM & CO.,

ENGINEERS AND BUILDERS OF



Machine Shop and Office:

N. E. Cor. 33d and Walnut Sts.

JAMES SCHLEICHER. AD. SCHLEICHER.

THE "OTTO" SILENT GAS ENGINE,

Philadelphia, February 1883

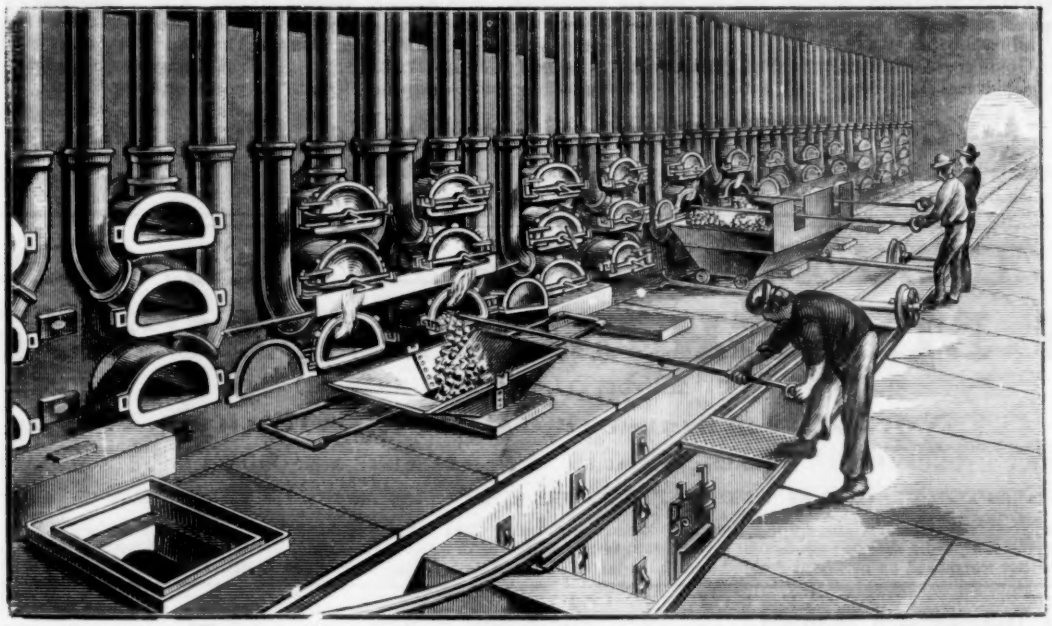
Notice.—

Having made important additions to our works, we can now offer to supply engines from 1 to 12 horse power on short notice.—

Schleicher, Schumm & Co.

Chas. F. Dieterich's Regenerator Furnace.

CAN BE ADAPTED TO ANY BENCH WITHOUT DISTURBING THE ORDINARY SETTINGS.



These Furnaces have been in operation at the works of the People's Gas Company, Baltimore, since June, 1878. A bench of sixes, with retorts 20 in. by 12 in. by 8 ft. 6 in. will burn off 1,350 pounds of coal in 3 hours. Twenty-five per cent. of the coke is sufficient to thoroughly burn off the charges.

State, city, and factory rights granted on reasonable terms. For full particulars apply to either

CHAS. F. DIETERICH, Eng'r Equitable Gas Co., BALTIMORE, MD.

WM. FARMER, 111 Broadway, N. Y. **F. L. HAGADORN,** 162 Beach St., Chicago, or **HENRY J. DAVISON,** 231 Broadway, N. Y